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IN THE

Supreme Court of the United States

OCTOBER TERM, 1976

No. 76-~~76-419~~

VERMONT YANKEE NUCLEAR POWER CORPORATION,

Petitioner

v.

NATURAL RESOURCES DEFENSE COUNCIL, INC., NEW ENGLAND COALITION ON NUCLEAR POLLUTION and CONSOLIDATED NATIONAL INTERVENORS, INC.,

Respondents

APPENDIX TO THE PETITION FOR A WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE DISTRICT OF COLUMBIA CIRCUIT

THOMAS G. DIGNAN, JR.
G. MARSHALL MORIARTY
WILLIAM L. PATTON
225 Franklin Street
Boston, Massachusetts 02110
617/423-6100
Attorneys for Petitioner

Of Counsel:
ROPES & GRAY
225 Franklin Street
Boston, Massachusetts 02110

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United States Court of Appeals

FOR THE DISTRICT OF COLUMBIA CIRCUIT

No. 74-1385

NATURAL RESOURCES DEFENSE COUNCIL, INC., ET AL, PETITIONER

v.

UNITED STATES NUCLEAR REGULATORY COMMISSION AND UNITED STATES OF AMERICA, RESPONDENTS

VERMONT YANKEE NUCLEAR POWER CORPORATION, INTERVENOR

No. 74-1586

NATURAL RESOURCES DEFENSE COUNCIL, INC., AND CONSOLIDATED NATIONAL INTERVENORS, PETITIONERS

v.

UNITED STATES NUCLEAR REGULATORY COMMISSION AND UNITED STATES OF AMERICA, RESPONDENTS

BALTIMORE GAS AND ELECTRIC CO., ET AL., INTERVENORS

Petition for Review of an Order of the Nuclear Regulatory Commission

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Argued May 27, 1975

Decided July 21, 1976

George W. Mayo, Jr., with whom *Robert M. Jeffers, David J. Hensler, Patrick M. Raher, Richard E. Ayres* and *Anthony Z. Roisman*, were on the brief for petitioners in No. 74-1385.

David Hensler and *Patrick M. Raher*, with whom *Robert M. Jeffers, George W. Mayo, Jr., Richard E. Ayres* and *Anthony Z. Roisman*, were on the brief for petitioners in No. 74-1586.

James A. Glasgow, Attorney, U.S. Nuclear Regulatory Commission, with whom *Wallace H. Johnson*, Assistant Attorney General, *Edmund B. Clark, John J. Zimmerman*, Attorneys, Department of Justice, *Raymond M. Zimmet*, Acting Solicitor, U.S. Nuclear Regulatory Commission, were on the brief for respondents. *Marcus A. Rowden, Jerome Nelson, Joseph DiStefono* and *Guy H. Cunningham, III*, Attorneys, U.S. Nuclear Regulatory Commission and *George R. Hyde* and *Edward J. Shawaker*, Attorneys, Department of Justice, also entered appearances for respondents.

George C. Freeman, Jr., with whom *W. Taylor Reveley, III, David S. Brollier* and *F. Case Whitlemore* were on the brief for intervenor, Baltimore Gas and Electric Company in No. 74-1586.

Thomas G. Dignan, Jr., for intervenor, Vermont Yankee Nuclear Power Corporation in No. 74-1385.

Louis J. Lefkowitz, Attorney, General of the State of New York and *John F. Shea, III*, Assistant Attorney General of the State of New York filed a brief on behalf of the State of New York as *amicus curiae*.

Arvin E. Upton, Harry H. Voight and *Eugene R. Fidell*, Filed a brief on behalf of Commonwealth Edison Company, Consolidated Edison Company of New York, Inc., Niagara Mohawk Power Corporation, Omaha Public Power District Powers Authority of the State of New

York and Rochester Gas and Electric Corp., as *amici curiae* urging affirmance.

Before: BAZELON, *Chief Judge*, EDWARDS,* *Circuit Judge* for the Sixth Circuit and TAMM, *Circuit Judge*

Opinion for the Court filed by *Chief Judge* BAZELON.

Separate statement of *Chief Judge* BAZELON.

Separate statement filed by *Circuit Judge* TAMM, concurring in the result.

BAZELON, *C.J.*: The problems posed in both these cases relate to the manner and extent to which information concerning the environmental effects of radioactive wastes must be considered on the public record in decisions to license nuclear reactors.

I. INTRODUCTION

Appeal number 74-1385 involves a proceeding to license a specific nuclear reactor (the Vermont Yankee Nuclear Power Station located near Vernon, Vermont). Pursuant to the National Environmental Policy Act,[1] petitioners[2]

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* Sitting by designation pursuant to 28 U.S.C. § 291(a).

[1] 42 U.S.C. § 4321, *et seq.* (1970) (hereafter "NEPA").

[2] Petitioners in 74-1385 are the Natural Resources Defense Council, Inc. ("NRDC") and the New England Coalition on Nuclear Pollution, Inc., voluntary organizations supported by contributions from individual members, which intervened in the licensing proceedings.

NRDC is also a petitioner in 74-1586, where it is joined by Consolidated National Intervenors, Inc. ("CNI"), a coalition of almost eighty public interest groups and individuals which actively participated in the rule making proceedings. Several groups such as the Sierra Club and the Union of Concerned Scientists which are members of CNI also made individual presentations.

[Continued]

sought consideration of the environmental effects of that portion of the "nuclear fuel cycle" [3] attributable to operation of that reactor. The Appeal Board held that Licensing Boards [4] must consider the environmental effects of transportation of fuel to a reactor and of wastes to reprocessing plants, but need not consider the "operations of the reprocessing plants or the disposal of wastes" in individual licensing proceedings. *In re Vermont Yankee Nuclear Power Corp.*, ALAB-56, 4 AEC 930 (June 6, 1972), I-J.A. 72, 76.[5]

Appeal number 74-1586 involves a rulemaking proceeding which the Commission instituted shortly thereafter with specific reference to the *Vermont Yankee* decision. The purpose of the rulemaking was to reconsider whether environmental effects of all stages of the uranium fuel cycle should be included in the cost-benefit analysis for licensing individual reactors. 37 Fed.Reg. 24191 (Nov. 15, 1972), II-J.A. 1. The Commission concluded the environmental effects of the fuel cycle, including waste disposal, were "relatively insignificant," [6] but that it was preferrable to take them into account. Therefore, a rule was promulgated requiring a series of specified numerical values (set out as Table S-3 accompanying the rule) be factored into the cost-benefit analysis

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Since on all but a few issues these groups adopted the same positions, for convenience they are referred to collectively as "public interest intervenors" in order to distinguish them from a group of 14 utility companies which also actively participated in the rulemaking. One member of that group, Baltimore Gas & Electric Co., has also intervened in the proceedings in this court.

[3] The "nuclear fuel cycle" is that chain of activities beginning with mining of uranium ore and extending through final reprocessing and disposal of radioactive wastes by which fuel for a nuclear reactor is processed. Most of these events take place off the individual reactor site, but are necessary to its continued operation.

Although the nuclear fuel cycle encompasses numerous stages, these cases are concerned almost exclusively with the reprocessing and disposal of wastes which the public interest intervenors contend account for by far the largest portion of the environmental impact of the fuel cycle.

The word *disposal* may itself be misleading, for it connotes some physical or chemical step which renders the wastes less toxic. Under present technology, the only known agent of detoxification is the passage of great amounts of time. The phase of the nuclear fuel cycle referred to as "disposal" generally refers only to storage of wastes in physical isolation.

[4] Licensing of commercial nuclear reactors embraces two separate proceedings—the first to determine whether the facility should be constructed; the second to determine whether it should be licensed to operate. *See generally*, Power Reactor Development Corp. v. I.U.E.W., 367 U.S. 396 (1961).

Proceedings are conducted before a three-member Atomic Safety and Licensing Board, 42 U.S.C. § 2241, which is the counterpart of an Administrative Law Judge in other agencies. The Licensing Board is typically composed of two nuclear physicists and one lawyer who serves as chairman.

[Continued]

The Atomic Energy Commission ("AEC") has delegated its review functions over Licensing Board decisions to Atomic Safety and Licensing Appeal Boards, subject to discretionary determination by the AEC itself of "major or novel questions of policy, law or procedure." 10 C.F.R. § 2.785(a); *id.* (d)(1).

The AEC was abolished by the Energy Reorganization Act of 1974, 88 Stat. 1233 *et seq.*, and its functions divided between the United States Nuclear Regulatory Commission (NRC), which has been substituted as formal respondent by order of this court, and the Energy Research and Development Agency (ERDA). For consistency, the terminology AEC or "the Commission" is used throughout.

[5] References to the joint appendix in 74-1385 are in the form "I-J.A." Both volumes of the appendix in 74-1586 are referred to as "II-J.A."

[6] *See infra* note 19.

for an individual reactor. These values are intended to represent the incremental contribution of an additional reactor to the environmental effect of the fuel cycle. The rule further provides that in addition to Table S-3, "No further discussion of such environmental effects shall be required." [7] Finally, it is declared that "[i]nsofar as this rule differs" from that announced in the *Vermont Yankee* decision, *supra*, that decision shall have "no further precedential significance." *Id.*

II. VERMONT YANKEE (74-1385)

It is undisputed that a reactor licensing is a "major Federal action[] significantly affecting the quality of the human environment" which requires a "detailed" environmental impact statement under § 102(2)(C) of NEPA, 42 U.S.C. § 4332(2)(C). That section requires an impact statement to consider, *inter alia*,

> (ii) any adverse environmental effects which cannot be avoided should the proposal be implemented,
>
> * * * *
>
> (v) any irreversible and irretriveable commitments of resources which would be involved in the proposed action should it be implemented.

The plain meaning of this language encompasses radioactive wastes generated by the operations of a nuclear power station, just as it does the stack gases produced by a coal-burning power plant.

Nor are the wastes generated by the subject reactor *de minimis*. We were informed at argument that the Vermont Yankee plant will produce approximately 160 pounds of plutonium wastes annually during its 40-year

[7] 39 Fed.Reg. 14188, 14191 (April 22, 1974), II-J.A. 507, 509. The rule is codified as Part 51.20(e) of 10 C.F.R. (1975) in a section entitled "Applicant's Environmental Report—Construction Permit Stage."

life span.[8] Plutonium is generally accepted as among the most toxic substances known; inhalation of a single microscopic particle is thought to be sufficient to cause cancer.[9] Moreover, with a half-life of 25,000 years, plutonium must be isolated from the environment for 250,000 years before it becomes harmless. Operation of the facility in question will also produce substantial quantities of other "high-level" [10] radioactive wastes in the form of stron-

[8] There has been some disagreement between the parties concerning the exact amounts of wastes to be produced. We are required to consider projects from the perspective of their potential effect on the "quality of the human environment." 42 U.S.C. § 4332(2)(C). Since plutonium and other high level wastes may be toxic in extremely small quantities, these variances are not of an order which would affect our conclusions.

[9] *See* Luschbauch & Langham, *A Dermal Lesion from Implanted Plutonium*, 86 ARCHIVES OF DERMATOLOGY at 121-24 (Oct. 1962).

The dangers of plutonium must be kept in perspective. Certain industrial chemicals and substances common in laboratories may be equally toxic. B. Cohen, *Environmental Hazards in High-Level Radioactive Waste Disposal*, 2 (unpublished). Recent theoretical calculations suggest many would survive even intentional dispersal of plutonium over a city. B. Cohen, *The Hazards in Plutonium Dispersal*, Institute for Energy Analysis, Oak Ridge, Tenn. (1975). *See also* Bethe, *The Necessity of Fission Power*, 234 SCIENTIFIC AMERICAN 21, 29 (1976).

[10] According to a pamphlet published by the AEC's office of Information to inform the general public, "high-level" wastes consist primarily of highly radioactive spent reactor fuel containing "several hundred to several thousand curies per gallon in liquid form . . . ." Fox, *Radioactive Waste*, AEC No. IB-508, 14-15 (rev. ed. 1969). They "pose the most severe potential health hazard and the most complex technical problems in management," *id.*, and thus attracted the bulk of the attention in these proceedings.

Less radioactive "low-level" wastes are also produced, primarily when objects such as pipes, rags or other debris are exposed to radioactivity produced in the reactor core. Low-

tium-90 and cesium-137 which, with their shorter, 30-year half-lives, must be isolated from the environment for "only" 600 to 1000 years.[11]

The Appeal Board advanced two major arguments to justify its decision that reprocessing and waste disposal issues need not be considered at the licensing stage: (1) that these issues are too speculative; and (2) that they are more appropriately considered when reprocessing and waste disposal facilities are themselves licensed. We turn now to these contentions.

The Board agreed that "there will be an incremental environmental effect ultimately resulting from the operation of this reactor as the result of the operation of whatever reprocessing and disposal grounds may from time to time be used during the life of the plant." [12] In its opin-

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level wastes have long been disposed of in commercial burial grounds and were thought not to constitute a major problem. Recently, however, EPA and GAO have publicly reported radioactive material has been "migrating" from such facilities at a rate "much more rapid than scientists thought possible." *See* "New Alarms About Old Nuclear Wastes," BUSINESS WEEK (Feb. 2, 1976) at 17; "GAO Reports New Nuclear Garbage Problem," 6 SCIENCE & GOV. RPT. 8 (Feb. 1, 1976).

[11] The general outlines of the high-level waste disposal problem are undisputed. In Scientists' Institute for Public Information, Inc. v. AEC (*"SIPI"*), 156 U.S.App.D.C. 395, 481 F.2d 1079, 1098 (1973), this court observed:

> These wastes will pose an admitted hazard to human health for hundreds of years, and will have to be maintained in special repositories. *The environmental problems attendant upon processing, transporting and storing these wastes . . . warrant the most searching scrutiny under NEPA.* [Emphasis added.]

[12] I-J.A. 80. We note at the outset that this standard is misleading because the toxic life of the wastes under discussion far exceeds the life of the plant being licensed. The

ion, however, these effects were too "contingent and presently indefinable" to be evaluated at the time of licensing in view of the 40-year expected life of the reactor. The Board wrote:

> It is evident to us that evaluation of the environmental effects of the operation of one or more unidentifiable reprocessing plants, employing separation processes which are unidentified and which may or may not now be known or used, during the course of the forty-year life of the plant, is not possible at this time and in this proceeding.

I-J.A. 82. This approach was decisively rejected in *SIPI*, supra, note 11, 481 F.2d at 1092. There we held that the obligation to make reasonable forecasts of the future is implicit in NEPA and therefore an agency cannot "shirk [its] responsibilities under NEPA by labeling any and all discussion of future environmental effects as 'crystal ball inquiry.'" "Meaningful information" concerning the effects of waste reprocessing and disposal technology is presently available, *see SIPI*, 481 F.2d at 1094, 1096. As the Board noted, a reprocessing plant has been operated by the Commission for some time, and additional plants are under construction. I-J.A. 79. The possibility that

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environmental effects to be considered are those flowing from reprocessing and passive storage for the full detoxification period.

It is also misleading to focus solely on the *incremental* impact of the waste generated by an additional reactor. *See* NRDC v. Callaway, 524 F.2d 79, 88 (2d Cir. 1975):

> [A]n agency may not . . . treat[] a project as an isolated "single-shot" venture in the face of persuasive evidence that it is but one of several substantially similar operations. . . . To ignore the prospective cumulative harm under such circumstances could be to risk ecological disaster.

See also Kleppe v. Sierra Club, 44 U.S.L.W. 5104, 5109 (U.S., June 28, 1976) (Comprehensive EIS should address cumulative impact of proposals "pending concurrently"); *cf. id.* at 5111 n.26.

improved technology may be developed during the 40-year life span of a reactor does not render consideration of environmental issues too speculative, as the Board appears to suggest. NEPA's requirement for forecasting environmental consequences far into the future implies the need for predictions based on existing technology and those developments which can be extrapolated from it.[13]

As more and more reactors producing more and more waste are brought into being, "irretrievable commitments [are] being made and options precluded," *see SIPI*, 481 F.2d at 1094, 1098, and the agency must predict the environmental consequences of its decisions as it makes them. *See Aberdeen & Rockfish R.R. v. SCRAP*, 422 U.S. 289, 320 (1975).

The second argument advanced by the Board is that licensing proceedings for reprocessing plants are a more "appropriate proceeding" in which to weigh the environmental effects of reprocessing and waste disposal. I-J.A. 86. Licensing of a reprocessing plant or waste disposal facility is itself a "major Federal action" affecting the environment which requires a NEPA statement. The real question posed by the Board's opinion is whether the environmental effects of the wastes produced by a

[13] Technical breakthroughs not now foreseen may of course render these assumptions too conservative, and environmental costs may turn out to be less than expected. The alternative is to rest on a blind faith in technological progress. This the draftsmen of NEPA were quite evidently unwilling to do.

Conversely, unforeseen problems sometimes crop up to forestall anticipated technological solutions. *See, e.g., infra* notes 46 & 47. Where important changes in the state of the art or other major uncertainties are in the offing, meaningful assessments of future environmental impacts might be facilitated by making two alternative estimates: one based only on existing technology and another which takes into account developments which may reasonably be anticipated. We have no occasion in this case to decide whether a court could ever require such a procedure.

nuclear reactor may be ignored in deciding whether to build it because they will later be considered when a plant is proposed to deal with them. To answer this question any way but in the negative would be to misconstrue the fundamental purpose of NEPA.[14] Once a series of reactors is operating, it is too late to consider whether the wastes they generate should have been produced, no matter how costly and impractical reprocessing and waste disposal turn out to be; all that remain are engineering details to make the best of the situation which has been created.[15] NEPA's purpose was to break the cycle of such incremental decision-making:

[14] *Cf.* Calvert Cliffs' Coordinating Comm. v. AEC, 449 F.2d 1109, 1128 (D.C.Cir. 1971). There the Commission proposed to forestall consideration of environmental issues in granting reactor construction permits until an operating license was issued. This court pointed out: "Once a facility has been completely constructed, the economic cost of any alteration may be very great . . . . By refusing to consider requirement of alterations until construction is completed, the Commission may effectively foreclose the environmental protection desired by Congress."

[15] Intervenor Baltimore Gas & Electric Co. contended at argument "however broad NEPA may be, it does not require agencies like the AEC, ICC or CAB to examine in the impact statement the very reason for being of that agency." We have already rejected that argument in Natural Resources Defense Council v. Morton, 458 F.2d 827, 836 (D.C.Cir. 1972): "The need for continuing review of environmental impact of alternatives under NEPA cannot be put to one side on the ground of past determinations by Congress or the President." *See also* Calvert Cliffs' Coordinating Comm. v. AEC, *supra* note 14, 449 F.2d at 1127. One function of NEPA is to provide systematic feedback to Congress and the public on the environmental costs of implementing programs so that they may be re-evaluated in the light of experience.

Moreover, the "reason for being" of the agencies administering the Atomic Energy Act of 1954 has never been unlimited development of civilian nuclear power without re-

> Policy is established by default and inaction. Environmental problems are only dealt with when they reach crisis proportion . . . . Important decisions concerning the use and shape of man's environment continue to be made in small but steady increments which perpetuate rather than avoid the recognized mistakes of previous decades.

Senate Rep. No. 296, 91st Cong., 1st Sess. 5 (1969). Decisions to license nuclear reactors which generate large amounts of toxic wastes requiring special isolation from the environment for several centuries are a paradigm of "irreversible and irretrievable commitments of resources" which must receive "detailed" analysis under § 102(2)(C)(v) of NEPA, 42 U.S.C. § 4332(2)(C)(v).[16] We therefore hold that absent effective generic proceedings to consider these issues, they must be dealt with in individual licensing proceedings.[17]

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gard to the costs or risks. The Congressionally declared purpose is only to "encourage widespread participation in the development and utilization of atomic energy for peaceful purposes *to the maximum extent consistent with . . . the health and safety of the public.*" 42 U.S.C. § 2013(d) (1970) [emphasis added].

[16] No one suggests that the two sentence statement in the Vermont Yankee Final Environmental Impact Statement is adequate to satisfy § 102(2)(c). It reads:

> Long-lived radioactive materials will be produced by fission of nuclear fuel in the core of the reactor and neutron activation of reactor parts near the core. The eventual disposal and storage of radioactive materials will require a certain amount of space, probably in an area remote from this plant, for a very long period of time, and could for all practical purposes be considered as an irreversible commitment of resources.

I-J.A. 263.

No attempt is made to estimate the quantity of wastes produced, describe what precautions must be taken, or assess the costs and risks involved.

[17] When the final full-power, full-term operating license for the Vermont Yankee Nuclear Power Station was issued, the

The order granting a full-term license for the Vermont Yankee plant is hereby remanded to await the outcome of further proceedings in the rulemaking, discussed hereafter.

III. RULEMAKING (74-1586)

(A.)

The notice of proposed rulemaking, 37 Fed.Reg. 24191 (Nov. 15, 1972), suggested as a possible alternative to the rule of *Vermont Yankee*, *supra*, that a series of specified numerical values (set out as Table S-3 in the notice) be factored into the cost-benefit analysis for individual

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Appeal Board "declined to re-examine" its earlier holdings that reprocessing and waste disposal issues need not be considered, since the rulemaking proceeding was then pending. I-J.A. 495-96. As a result, the Government argues the only issue raised is "whether the Commission under the National Environmental Policy Act (NEPA) could deal with fuel cycle issues by rulemaking, instead of in the context of numerous separate adjudications, such as the Vermont Yankee licensing proceeding." Respondent's brief at 5.

No one questions the AEC's power to do so in this proceeding. *Cf.* Union of Concerned Scientists v. AEC, 499 F.2d 1069 (D.C.Cir. 1974). Nor do we doubt that generic proceedings are a more efficient forum in which to develop these issues without needless repetition and potential for delay. *See* Ecology Action v. AEC, 492 F.2d 998, 1002 (2d Cir. 1974) (Friendly, J.) (dictum); Note, "The Use of Generic Rulemaking to Resolve Environmental Issues in Nuclear Power Plant Licensing," 61 VA.L.REV. 869, 878-79 (1975). However, the decision to hold generic proceedings rather than to leave these issues for individual licensings is left to agency discretion. *See infra* note 27.

What the agency may not do, consistent with NEPA, is to fail to give these issues adequate consideration in either forum. Thus, until an adequate generic proceeding is held (which may also consolidate a number of pending cases, *see, e.g.*, Specialized Common Carrier Services, 29 F.C.C. 870 (1971)), these issues will be ripe in individual licensing proceedings.

reactors.[18] These values were intended to represent the

[18]

TABLE S-3.—*Summary of environmental considerations for uranium fuel cycle*

[Normalized to model LWR annual fuel requirement]

Natural resource use	Total	Maximum effect per annual fuel requirement of model 1,000 MWe LWR
Land (acres):		
Temporarily committed	68	
Undisturbed area	43	
Disturbed area	18	Equivalent to 90 MWe coal-fired powerplant.
Permanently committed	4.6	
Overburden moved (millions of MT)	2.7	Equivalent to 90 MWe coal-fired powerplant.
Water (millions of gallons):		
Discharged to air	156	≈2 percent model 1,000 MWe LWR with cooling tower.
Discharged to water bodies	11,040	
Discharged to ground	123	
Total	11,319	<4 percent of model 1,000 MWe LWR with once-through cooling.
Fossil fuel:		
Electrical energy (thousands of MW-hour)	317	<5 percent of model 1,000 MWe LWR output.
Equivalent coal (thousands of MT)	115	Equivalent to the consumption of a 45 MWe coal-fired powerplant.
Natural gas (millions of scf)	92	<0.2 percent of model 1,000 MWe energy output.
Effluents—chemical (MT):		
Gases (including entrainment):[1]		
SO_x	4,400	Equivalent to emissions from 45 MWe coal-fired plant for a year.
NO_2[2]	1,177	
Hydrocarbons	13.5	
CO	28.7	
Particulates	1,154	
Other gases:		
F	.72	Principally from UF_6 production enrichment and reprocessing. Concentration within range of state standards—below level that has effects on human health.
Liquids:		
$SO_4^=$	10.3	From enrichment, fuel fabrication, and reprocessing steps. Components that constitute a potential for adverse environmental effect are present in dilute concentrations and receive additional dilution by receiving bodies of water to levels below permissible standards. The constituents that require dilution and the flow of dilution water are: NH_3—600 cfs; NO_3—20 cfs; Fluoride—70 cfs
NO_3^-	26.7	
Fluoride	12.9	
Ca^{++}	5.4	
Cl^-	8.6	
Na^+	14.9	
NH_3	11.5	
Fe	.4	
Tailings solutions (thousands of MT)	240	From mills only—no significant effluents to environment.
Solids	91,000	Principally from mills—no significant effluents to environment.
Effluents—Radiological (curies):		
Gases (including entrainment):		
Rn-222	73	Principally from mills—maximum annual dose rate <4 percent of average natural background within 5 mi of mill. Results in 0.06 man-rem per annual fuel requirement.
Ra-226	.02	
Th-230	.02	
Uranium	.032	
Tritium (thousand)	16.7	Principally from fuel reprocessing plants—Whole body dose is 6 man-rem per annual fuel requirements for population within 50 mi radius. This is <0.007 percent of average natural background dose to this population. Release from Federal Waste Repository of 0.005 Ci/yr has been included in fission products and transuranics total.
Kr-85 (thousands)	330	
I-129	.0024	
I-131	.024	
Fission products and transuranics	1.01	
Liquids:		
Uranium and daughters	2.1	Principally from milling—included in tailings liquor and returned to ground—no effluents; therefore, no effect on environment.
Ra-226	.0034	From UF_6 production—concentration 5 percent of 10 CFR 20 for total processing of 27.5 model LWR annual fuel requirements.
Th-230	.0015	
Th-234	.01	From fuel fabrication plants—concentration 10 percent of 10 CFR 20 for total processing 26 annual fuel requirements for model LWR.
Rn-106[3]	.15	From reprocessing plants—maximum concentration 4 percent of 10 CFR 20 for total reprocessing of 26 annual fuel requirements for model LWR.
Tritium (thousands)	2.5	
Solids (buried):		
Other than high level	601	All except 1 Ci comes from mills—included in tailings returned to ground—no significant effluent to the environment. 1 Ci from conversion and fuel fabrication is buried.
Thermal (billions)	2,260	<7 percent of model 1,000 MWe LWR.
Transportation (man-rem): Exposure of workers and general public.	.334	

[1] Estimated effluents based upon combustion of equivalent coal for power generation.
[2] 1.2 percent from natural gas use and process.
[3] Co-127 (0.075 Ci/AFR) and Sr-90 (0.004 Ci/AFR) are also emitted.

incremental contribution of a hypothetical 1000 MWe model light water reactor to the total environmental effect of the uranium fuel cycle. While expressed as numerical values in Table S-3, a fair summary of the conclusions incorporated into the rule is that the environmental effects of the fuel cycle are "insignificant." [19] The notice further stated that the "supporting data for this summary table" is contained in a staff document entitled the "Environmental Survey of the Nuclear Fuel Cycle" (Nov. 6, 1972) [hereafter "Environmental Survey"], which was simultaneously made public.[20]

An "informal rulemaking hearing" of the "legislative-type" was scheduled to receive comments in the form of "oral or written statements." [21] By subsequent notice, the Commission designated a three-member hearing board to preside, and reiterated, "The procedural format for the hearing will follow the legislative pattern, and no discovery or cross-examination will be utilized." 38 Fed. Reg. 49 (Jan. 3, 1973).[22]

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[19] In explaining its decision not to require Table S-3 to be applied retroactively, the Commission stated:

> In view of the fact that the environmental effects of the uranium fuel cycle have been shown to be relatively insignificant, the Commission believes that it is unnecessary to apply the [rule] to . . . environmental reports submitted prior to its effective date. . . .

39 Fed.Reg. 14190 (April 22, 1974); II-J.A. 508.

[20] 37 Fed.Reg. 24192 n.1; *id.*, 24193.

It is conceded that the Environmental Survey was not "intended to be a detailed environmental statement as defined in the National Environmental Policy Act of 1969. . . ." I-J.A. 512; 39 Fed.Reg. 14188 (April 22, 1974), II-J.A. 507.

[21] 37 Fed. Reg. 24191 (Nov. 15, 1972).

[22] It should be noted that members of the presiding hearing board were empowered to ask questions, and occasionally did. In addition, "over 100 pages of handwritten calculations" and

The primary argument advanced by the public interest intervenors is that the decision to preclude "discovery or cross-examination" denied them a meaningful opportunity to participate in the proceedings as guaranteed by due process. They do not question the Commission's authority to proceed by informal rulemaking, as opposed to adjudication. They rely instead on the line of cases indicating that in particular circumstances procedures in excess of the bare minima prescribed by the Administrative Procedure Act, 5 U.S.C. § 553, may be required.[23]

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prior drafts of the Environmental Survey were eventually placed in the public document room. 39 Fed.Reg. 14190-91 (April 22, 1974).

None of these documents, however, dealt with the crucial waste disposal issues covered by Dr. Pittman, *see infra* pp. 23-32.

[23] *See, e.g.*, Mobil Oil Corp. v. FPC, 157 U.S.App.D.C. 235, 483 F.2d 1238, 1260 (1973); International Harvester Co. v. Ruckelshaus, 155 U.S.App.D.C. 411, 478 F.2d 615, 629-31, 649 (1973); Appalachian Power Co. v. EPA, 477 F.2d 495, 503 (4th Cir. 1973); Walter Holm & Co. v. Hardin, 145 U.S.App. D.C. 347, 449 F.2d 1009, 1016 (1971); American Airlines, Inc. v. CAB, 123 U.S.App.D.C. 310, 359 F.2d 624, 632-33 (en banc), *cert. denied*, 385 U.S. 843 (1966).

See also, Williams, *"Hybrid Rulemaking" under the Administrative Procedure Act: A Legal and Empirical Analysis*, 42 U.CHI.L.REV. 401 (1975); Wright, *Court of Appeals Review of Federal Regulatory Agency Rulemaking*, 26 ADMIN. L.REV. 199 (1974); Wright, *The Courts and the Rulemaking Process: The Limits of Judicial Review*, 59 CORNELL L.REV. 375 (1974). Verkuil, *Judicial Review of Informal Rulemaking*, 60 VA.L.REV. 185, 234-49 (1974); Note, *The Judicial Role in Defining Procedural Requirements for Agency Rulemaking*, 87 HARV.L.REV. 782 (1974); Hamilton, *Procedures for the Adoption of Rules of General Applicability: The Need for Procedural Innovation in Administrative Rulemaking*, 60 CALIF.L.REV. 1276, 1313-30 (1972); Claggett, *Informal Action —Adjudication—Rulemaking: Some Recent Developments in Federal Administrative Law*, 1971 DUKE L.J. 51, 78.

The Government concedes that "basic considerations of fairness may under exceptional circumstances" require additional procedures in "legislative-type proceedings," but contends that the procedures here were more than adequate.[24] Thus, we are called upon to decide whether the procedures provided by the agency were sufficient to ventilate the issues.[25]

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[24] Respondent's brief at 13-14.

[25] We disagree with Intervenor Baltimore Gas & Electric Co.'s threshold objection that the public interest intervenors failed to make a proffer of the specific issues and witnesses which they claimed could not adequately be explored without cross-examination as required by International Harvester Co. v. Ruckelshaus, *supra* note 23, 478 F.2d at 630-31; *see also* American Airlines v. CAB, *supra* note 23, 359 F.2d at 632-33. The public-interest intervenors submitted a thorough legal brief demanding cross-examination and discovery rights. CNI-UCS Statement with Respect to Legal Considerations of the Proposed Regulations on the Nuclear Fuel Cycle, 20-29; II-J.A. 225, 245, 254. The first point made by Mr. Roisman, attorney for the public interest intervenors, in the oral hearings was a request to be allowed to go behind the reassurances offered by Dr. Pittman:

> The Atomic Energy Commission continues to take subjects as important as nuclear waste disposal and treat them in a cavalier manner that we find them treated in this environmental survey. They continue to raise the issues of the environmental [sic] fuel cycle in the most obtuse manner, and subject it to this type of a legislative hearing, while refusing to face up to the fact that the public demands the right to cross-examine and to have discovery on these issues, that we are not satisfied with Mr. Pittman's well intentioned, but, we think, not at all well explained position with regard to the ability to handle nuclear wastes for hundreds of thousands of years. He has in his own words referred to it as a program of perpetual management . . . . I think the public deserves the right to ask the question, What does that mean?

II-J.A. 121-22. That was sufficient to focus the agency's at-

A few general observations are in order concerning the role of a court in this area. Absent extraordinary circumstances, it is not proper for a reviewing court to prescribe the procedural format which an agency must use to explore a given set of issues.[26] Unless there are statutory directives to the contrary, an agency has discretion to select procedures which it deems best to compile a record illuminating the issues.[27] Courts are no more expert at fashioning administrative procedures than they are in

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tention on Dr. Pittman's testimony as in the category of "soft and sensitive subjects and witnesses." International Harvester, *supra*, 478 F.2d at 631. *See infra*, pp. 32-33.

To be sure, the public interest intervenors did not show that these issues could not be explored except through cross-examination; nor did they attempt such a showing. Their argument, as we understand it, is not that cross-examination was required *per se*, but that the procedures utilized by the Commission were in the aggregate inadequate sufficiently to ventilate the issues. They recognize, for example, that exploration of the underlying methodology of the Environmental Survey could have been facilitated by adequate discovery, as an alternative to cross-examination of the staff. *See* Petitioner's Brief, 13-15.

[26] The Supreme Court has recently cautioned against requiring an agency to use particular procedures on remand:

> At least in the absence of substantial justification for doing otherwise, a reviewing court may not, after determining that additional evidence is requisite for adequate review, proceed by dictating to the agency the methods, procedures, and time dimension of the needed inquiry and ordering the results to be reported to the court without opportunity for further consideration on the basis of the new evidence by the agency.

FPC v. Transcontinental Gas Pipe Line Corp., 96 S.Ct. 579, 583 (1976) (per curiam) [footnote omitted].

[27] *See* NLRB v. Bell Aerospace Co., 416 U.S. 267, 292-95 (1974); SEC v. Chenery Corp., 332 U.S. 194, 203 (1947) (Chenery II); Siegel v. AEC, 400 F.2d 778, 783 (D.C.Cir. 1968).

the substantive areas of responsibility which are left to agency discretion.[28] What a reviewing court can do, however, is scrutinize the record as a whole to insure that genuine opportunities to participate in a meaningful way were provided, and that the agency has taken a good, hard look at the major questions before it.

We have sometimes suggested that elucidation of certain types of issues, by their very nature, might require particular procedures, including cross-examination.[29] In fact, we have been more concerned with making sure that the record developed by agency procedures discloses a thorough ventilation of the issues than with what devices the agency used to create the dialogue.[30]

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[28] That may be reflected in the finding that in most cases where the right to cross-examination was won on appeal, it was not actually used on remand, the parties instead agreeing on more flexible procedures such as written memoranda explaining technical methodology or informal staff conferences which better suited their needs. *See* Williams, *supra* note 23, 42 U.CHI.L.REV. at 436-37; 448-54.

[29] *See, e.g.*, International Harvester v. Ruckelshaus, *supra* note 23, 478 F.2d at 631 ("soft and sensitive subjects and witnesses"); *but cf.* O'Donnell v. Shaffer, 160 U.S.App.D.C. 266, 491 F.2d 59, 62 (1974) (Bazelon, C.J.): "the presence of technical issues in and of itself [does not] create a need for cross-examination."

[30] *See, e.g.*, Walter Holm & Co. v. Hardin, *supra* note 23, 449 F.2d at 849: "What counts is the reality of an opportunity to submit an effective presentation, to assure that the Secretary and his assistant will take a hard look at the problems in light of those submissions."; International Harvester v. Ruckelshaus, *supra* note 23, 478 F.2d at 631: "There was a meaningful opportunity to be heard. . . . The record reveals that the hearing officers did not propound the pre-submitted questions like robots; they were charged with conducting a hearing for the purpose of focusing information needed for decision and they quite appropriately 'followed up' on questions."; O'Donnell v. Shaffer, *supra* note 23, 491 F.2d at 62: "Here the agency's proceedings provided an adequate oppor-

Of necessity, assessing agency procedures requires that the reviewing court immerse itself in the record. Abstract characterizations are an unsatisfactory guide for determining what procedures are necessary in particular proceedings.[31] Alternative procedural techniques are usually available, and the absence of one device, such as cross-examination, may be compensated for by the sensitive use

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tunity for the airing of technical disputes. Appellants presented their evidence orally and in writing and questioned a supporter of the rule who testified at the hearing. The agency considered the evidence presented at the hearing in its 'Disposition of Petition.' On these facts, the procedures were adequate for the task at hand."; Ethyl Corp. v. EPA, No. 73-2205 (D.C.Cir., March 19, 1976) (en banc) (opinion of Wright, J.), slip op., 119-22, —— F.2d ——, ——, *cert. denied*, 44 U.S.L.W. 3719 (June 10, 1976), reviewing in detail the procedures used and the agency's lengthy opinion and concluding: "The complex scientific questions presented by this rulemaking proceeding were resolved in the crucible of debate through the clash of informed but opposing scientific and technological viewpoints." [Citation omitted.]

[31] *See* Wright, *supra* note 23, 26 ADMIN.L.REV. at 206-7; *id.*, 59 CORNELL L.REV. at 387-88.

Judge Tamm professes surprise that one who believes judges must avoid making "plausible-sounding, but simplistic, judgments of the relative weight to be afforded various pieces of technical data," Ethyl Corp. v. EPA, *supra* note 30 (Bazelon, C.J., concurring), slip op., 2, nonetheless believes review of agency procedures requires conscientious attention to the state of the record. Concur, n. 7.

There is, however, a difference crucial to the institutional competency of judges between the majority opinion here and the panel opinion, joined by Judge Tamm, which was overturned by the court *en banc* in *Ethyl*. The panel in *Ethyl* took it upon itself to decide that an expert agency had made "clear errors of judgment" in evaluating conflicting scientific studies. Slip op., 48. Here we merely systematically catalog the state of the record to verify that the agency has digested and addressed the major issues.

of substitutes.[32] If review is to be meaningful, it must focus on the actual operation of the whole range of procedures in a particular setting—including "contexts of fact, statutory framework, and nature of action." [33]

A prominent feature of the statutory context created by NEPA is the requirement that the agency acknowledge and consider "responsible scientific opinion concerning possible adverse environmental effects" which is contrary to the official agency position. (*see, e.g., infra* note 51). *Committee for Nuclear Responsibility, Inc.* v. *Seaborg*, 463 F.2d 783, 787 (D.C. Cir. 1971). NEPA requires that agencies see to it that "the officials making the ultimate decision [are] informed of the full range of responsible opinion on the environmental effects in order to make an informed choice." *Id.* The decision to proceed by rulemaking neither relieves the Commission of this obligation, nor permits it to depend solely on whatever contributions intervenors happen to make to develop a fair representation of scientific opinion for the record.[34]

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[32] *See* International Harvester v. Ruckelshaus, *supra* note 23, 478 F.2d at 631.

[33] Kennecott Copper Corp. v. EPA, 149 U.S.App.D.C. 231, 235, 462 F.2d 846, 850 (1972).

[34] At least in the NEPA context, an agency has an affirmative obligation to explore the issues in depth, rather than wait passively until an intervenor takes the initiative. *See* Calvert Cliffs' Coordinating Comm. v. AEC, *supra* note 14, 449 F.2d at 1118-19. There the Commission proposed to limit consideration to environmental issues "which parties affirmatively raise." The court held that was inconsistent with NEPA's "basic mandate":

> The primary responsibility for fulfilling that mandate lies with the Commission. Its responsibility is not simply to sit back, like an umpire, and resolve adversary contentions at the hearing stage. Rather, it must take the initiative. . . .

See also Scenic Hudson Preservation Conference v. FPC, 354 F.2d 608, 620-21 (2d Cir. 1965), *cert. denied*, 384 U.S. 941

In order to determine whether an agency has lived up to these responsibilities, a reviewing court must examine the record in detail to determine that a real give and take was fostered on the key issues. This does not give the court a license to judge for itself how much weight should be given particular pieces of scientific or technical data, a task for which it is singularly ill-suited. It does require, however, that the court examine the record so that it may satisfy itself that the decision was based "on a consideration of the relevant factors." [35] Where only one side of a controversial issue is developed in any detail, the agency may abuse its discretion by deciding the issues on an inadequate record.

A reviewing court must assure itself not only that a diversity of informed opinion was heard, but that it was genuinely considered. "[T]he dialogue that the APA's rulemaking section contemplates cannot be a sham." [36] Since a reviewing court is incapable of making a penetrating analysis of highly scientific or technical subject matter on its own, it must depend on the agency's ex-

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(1966) (agency duty to develop full record grounded on broad principles of administrative law); Note, *supra* note 17, 61 VA.L.REV. at 891: "when the record is deficient, the Commission may even have a duty to consider issues ignored by the parties."

In both *Calvert Cliffs* and *Scenic Hudson*, the court pointed out that poorly-financed public interest intervenors may lack the wherewithal to marshal technical evidence and bring it to the Commission's attention. *See also* American Public Power Ass'n v. FPC, 522 F.2d 142, 147 (D.C.Cir. 1975) (Bazelon, C.J., concurring); Citizens for Safe Power v. NRC, 524 F.2d 1291, 1304 (D.C.Cir. 1975) (Bazelon, C.J., concurring).

[35] Citizens to Preserve Overton Park, Inc. v. Volpe, 401 U.S. 402, 416 (1971). *Cf.* Ethyl Corp. v. EPA, *supra* note 30 (Bazelon, C.J., concurring), slip op., 2 n.7.

[36] Wright, *supra* note 23, 26 ADMIN.L.REV. at 206.

pertise, as reflected in the statement of basis and purpose, to organize the record, to distill the major issues which were ventilated and to articulate its reasoning with regard to each of them.[37]

An agency need not respond to frivolous or repetitive comment it receives. However, where apparently significant information has been brought to its attention, or substantial issues of policy or gaps in its reasoning raised, the statement of basis and purpose must indicate why the agency decided the criticisms were invalid.[38] Boilerplate generalities brushing aside detailed criticism on the basis of agency "judgment" or "expertise" avail nothing; what is required is a reasoned response, in which the agency points to particulars in the record which, when coupled with its reservoir of expertise, support its resolution of the controversy.[39] An agency may abuse its discretion by proceeding to a decision which the record before it will not sustain, in the sense that it raises fundamental questions for which the agency has adduced no reasoned answers.

(B.)

With these observations in mind, we turn to our examination of this record. The significance of Table S-3 is that it expresses in numerical terms the conclusion that the environmental effects of the fuel cycle, including waste

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[37] *See* Portland Cement Ass'n v. Ruckelshaus, 486 F.2d 375, 393-95 (D.C.Cir. 1973), *cert. denied*, 417 U.S. 921 (1974); *cf.* Automotive Parts & Accessories Ass'n v. Boyd, 407 F.2d 330, 338 (D.C.Cir. 1968) (statement of basis and purpose must be explicit enough to allow court "to see what major issues of policy were ventilated by the informal proceedings and why the agency reacted to them as it did").

[38] Portland Cement Ass'n v. Ruckelshaus, *supra* note 37, 486 F.2d at 393-94.

[39] *See* Wright, *supra* note 23, 26 ADMIN.L.REV. at 209-210.

disposal, are insubstantial.[40] The primary basis for these judgments is the data assembled by the staff in the draft Environmental Survey made public with the proposed rule. The conclusions reached by the staff in the Environmental Survey were in turn adopted without modification by the Commission as Table S-3 and embodied in the final rule. Thus, support for a rule limiting consideration of environmental issues to the numbers in Table S-3 must be found in one of three places: the Environmental Survey, the back-up documentation to which it refers, and the oral and written testimony offered at the hearing. It is to these sources we must look for a thorough ventilation of the underlying issues.

The Environmental Survey made public prior to the hearing was intended to "provide[] a basis for an informed consideration of the . . . environmental impact associated with the uranium fuel cycle . . . [and to] contain[] extensive references to background documents available to members of the public." 38 Fed.Reg. 49 (Jan. 3, 1973). Regarding most phases of the fuel cycle, these promises were fulfilled and the Environmental Survey did an adequate, even admirable job, of describing the processes involved. It assembles data on the consumption of resources, and discusses the risks of accidents and other hazards in detail, supporting the staff's conclusions with numerous references to the scholarly literature and to technical reports on file with the Commission. However, with regard to the two phases of the fuel cycle which are the focal points for this appeal, reprocessing and waste disposal,[41] that kind of detailed explanation

[40] *See supra* note 19.

[41] In a general way, "reprocessing" is that phase of the fuel cycle in which reusuable portions of spent fuel are extracted for recycling and the remaining radioactive residues are concentrated. "Waste disposal," a misnomer for what is more appropriately termed "waste storage and management," refers to containment of wastes during the long periods necessary for them to decay naturally into non-toxic substances. *See supra* note 3.

and support for the staff's conclusions was noticeably absent from the Environmental Survey as originally published.

The only discussion of high-level waste disposal techniques was supplied by a 20-page statement by Dr. Frank K. Pittman, Director of the AEC's Division of Waste Management and Transportation. This statement, delivered during the oral hearings, was then incorporated, often verbatim, into the revised version of the Environmental Survey published after the comment period.[42] Dr. Pittman began his statement by acknowledging that he was "broadly involved" with the subject of high-level waste management since he heads the division of the AEC charged with "responsibility for the development, construction and operation of facilities for ultimate management of commercial high-level waste." [43]

Dr. Pittman proceeded to describe for the first time in public the "design concepts" for a federal surface reposi-

[42] *See* "Environmental Survey of the Uranium Fuel Cycle" (April, 1974) (hereafter "Revised Environmental Survey") G-23 n.18, II-J.A. 740.

For example, the discussion of the possibility of accidental release of wastes as a result of loss of coolant at *id.*, G-19-21, II-J.A. 736-737, is taken verbatim from Dr. Pittman's statement.

[43] II-J.A. 59. In Portland Cement Ass'n v. Ruckelshaus, *supra* note 37, 486 F.2d at 400 n.95, the court pointed out that where a "principal source of reliance by the agency" was "peculiarly subject to considerations of self-interest, more might be required than mere comments." Evaluation of a program by the in-house staff member charged with the responsibility for administering it falls within the intendment of that statement.

tory for retriveable storage of high-level waste.[44] This is essentially a warehouse in which sealed canisters containing cylinders of solidified nuclear wastes can be stored in water-filled basins recessed into the ground on a temporary basis (up to 100 years), until such time as a permanent waste disposal scheme is devised, when they can be removed.[45] While the "intended life" of the facility is only 100 years, some high-level wastes must be isolated for up to 250,000 years. *See supra* p. 7. Therefore, the Environmental Survey states, without further explanation, that in the future a "permanent" Federal repository for "geologic storage of high-level wastes" will be established and that the "Federal government will have the obligation to maintain control over the site *in perpetuity*." II-J.A. 724 [emphasis added].

Until recently the AEC planned to dispose of wastes by burying them deep inside abandoned salt mines. These plans were postponed indefinitely after a series of tech-

[44] The staff subsequently described the significance of Dr. Pittman's testimony as follows:

> When the [Environmental Survey] was published in November 1972, the data on the proposed Federal Repository for high level waste storage were limited to preliminary criteria and generalized statements. . . . The information in Dr. Pittman's statement is the first public release of the preliminary concepts for the Federal Repository and provides a summary of the current status and potential environmental effects of the high level waste interim storage facility and further AEC plans for longer term storage. The information from his testimony will be incorporated in the revised edition of the [Environmental Survey]. . . . The additional data presented by Dr. Pittman show that the interim high-level waste repository will be designed to have little environmental impact.

"Additional Information on Environmental Effects of the Uranium Fuel Cycle," II-J.A. 355-56.

[45] *See* Revised Environmental Survey, G-7, II-J.A. 724.

nical difficulties, including the discovery the salt mines might be susceptible to underground flooding. The Revised Environmental Survey devotes two sentences to recounting how prior waste disposal plans fared:

> It was planned to construct a Federal repository in a salt mine for long-term geological storage of solid high-level wastes by the mid 1970's. However, subsequent events have deferred the site selection and construction of such a facility.

II-J.A. 724. The "subsequent events" which led to the shelving of the salt mine plan are not discussed.[46]

[46] The difficulties encountered regarding the primary site considered, salt beds near Lyons, Kansas, have recently been summarized as follows:

> Although that site had been under consideration for many years by the [AEC], it was not until 1971 that the commission and its contractors discovered two major problems with it. One was a series of abandoned gas and oil drill holes in the area. Another was an adjacent salt mine's extensive use of water to dissolve out the salt—including a hydraulic fracturing technique which had resulted in the disappearance underground of some 175,000 gallons of water. Both discoveries cast doubt on the long-term safety and integrity of the proposed Lyons site, since it appeared possible that water might penetrate the area and allow radioactive wastes to escape.

Boffey, "Radioactive Waste Site Search Gets Into Deep Water," 190 SCIENCE 361 (Oct. 24, 1975).

After the planned site near Lyons, Kansas was abandoned, attention focused on salt beds in southeastern New Mexico. Unexpected problems have recently been encountered at this site, too. A test hole hit a large underground pocket of brine and explosive gases. Not only would the presence of these gases threaten the safety of workers at any facility, but a "second disturbing aspect is that the presence of the brine solution may indicate that fluids have been migrating underground, thereby threatening the integrity of the site." *Id.* As the result, the search for a suitable site has been moved once again, this time to an area several miles away.

Dr. Pittman's description of the new plan—now also postponed indefinitely [47]—to build a surface storage facility can only fairly be described as vague, but glowing. He begins:

> . . . I hope I will be able to allay what I feel are unwarranted fears . . . and show that the bugaboo of waste management cannot logically be used as a rationale for delays in the progress of an essential technology for meeting our growing power demands.
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> [T]here are available today proven methods for managing the high-level waste from the nuclear industry in a way which will assure first that man will not be adversely affected by the radioactivity either by external or internal contact with the waste itself or by exposure to the penetrating radiation which it generates, and second that the environment [sic] effects will be very small.

II-J.A. 59-60. In less than two pages, he set out a very general description of what the facility is supposed to do, II-J.A. 63-66, accompanied by several schematic drawings. These show the facility will have a cooling system, a transfer area and storage basins, but do not attempt to describe how they will be built and operated, what materials will be used, where such a facility might be located, or what it might cost to build and operate.

[47] By letter dated April 9, 1975, the Administrator of ERDA informed the Congressional Joint Committee on Atomic Energy that preliminary funding for a Retrievable Surface Storage Facility was being deleted from the fiscal 1976 budget request pending a "comprehensive reevaluation of the federal program in this critical and controversial area." *See* "ERDA Shelves a Nuclear Waste Storage Plan," 188 SCIENCE 345 (April 25, 1975).

As part of that review, we understand revised impact statements are being prepared concerning reprocessing and waste disposal. As those matters are not before us, we intimate no opinion regarding the extent to which they may cure the deficiencies in the present proceeding.

Recent Congressional testimony by ERDA officials indicates a return to the plan to bury wastes, although no site has been finally chosen. "Salt, Rock Formations Favored for A-Wastes," *Washington Post*, May 11, 1976, A-2, cols. 1-3.

Dr. Pittman then explains that "the major factor in the design of the repository for high-level waste is the technique used to remove the heat from the waste." II-J.A. 63. Decaying radioactive waste spontaneously gives off substantial heat and "[s]hould adequate provisions not be made to remove this heat . . ., the waste and the canister would melt." *Id.* A "meltdown" would result in what Dr. Pittman calls a "situation of considerable concern," which would involve the "loss of some fraction of the isolation of the radioactive material from the environment." II-J.A. 65. No attempt is made to describe how serious a radioactivity hazard would be presented.

In a paragraph which is carried over verbatim in the Revised Environmental Survey, II-J.A. 726, Pittman states:

> The Commission has carried out extensive evaluations of safety, reliability, operability, maintainability and economics of various methods for removing heat, and has essentially narrowed the area for further study to techniques using either water or air as the heat transfer medium.

II-J.A. 64. No citations are given for these studies; in fact, there are no references to back-up materials supporting any of Pittman's statement, or those portions of the Revised Environmental Survey drawn from it.[48]

[48] Following Dr. Pittman's presentation one of the presiding board members remarked:

> . . . one of the, I think, outstanding practices of the Staff has been in the past, at least as far as I can tell,

Again without benefit of details, Dr. Pittman offers conclusory reassurances that the proposed facility will be designed so that the possibility of a "meltdown" can be dismissed as "incredible":

> The probability of this situation occurring is prevented by a combination of engineered features including, (i) redundancy of power supply and other essential cooling systems; (ii) structural strength to withstand credible forces of nature—earthquake, tornado, etc.; (iii) combination of structural strength, plant security, etc., to withstand credible overt forces of man; (iv) modular basin cell construction which limits the number of canisters subject to a single catastrophic event.

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to meticulously document the assumptions that are made in the discussions. I find that that has not been done here. . . . I guess I must assume that one of the reasons that those assumptions have not been documented and clarified or justified in the purest sense of the word, is because of the time schedule required to get this thing on so we could get to hearings. Can it be assumed that if there is going to be a significant revision to this document that in those areas where assumptions are made, particularly where there is a statement to the effect that something is trivial, or insignificant, that somewhere there will appear in that same document some kind of justification based on data or a reference which one can go back to and find the source.

II-J.A. 116-17.

A staff member assured the questioner "[w]e will make every effort to go back and see if we can improve that," II-J.A. 118, and subsequently the staff submitted a 56 page document of "Additional Information on Environmental Effects of the Uranium Fuel Cycle," II-J.A. 352. However, less than two pages are devoted to the waste disposal issues addressed by Dr. Pittman, and these merely correct four minor numerical and typographical errors or omissions in his testimony. *See* II-J.A. 402-03. Nor does the Revised Environmental Survey fill in the gaps in Dr. Pittman's testimony.

> Thus, before a meltdown could occur, it would be necessary to have a series of failures of systems which will be engineered, constructed, and operated for maximum reliability under rigorous quality assurance programs before a situation could occur where sufficient water could not be added to and maintained in the cell to keep it from leaking or boiling dry. The timing for such a series of failures to result in uncorrectable situations is important. The individual failure of power systems for circulating the coolant would not result in pool water boiling for at least 16 hours. Various corrective actions may be taken any time within a week which would prevent cell water from boiling away. After the complete loss of water, an additional day would be required before the waste would begin to melt. The number of sequential failures required of highly reliable systems, combined with the long time periods available for repair and recovery from each, result in the judgment that this is an incredible incident.

II-J.A. 65-66. His unadorned conclusion is in turn incorporated verbatim into the Revised Environmental Survey.[49]

Other than the broad reference to "structural strength, plant security, etc., to withstand credible overt forces of man", there is no discussion of how the facility would be protected from terrorism.[50] While Dr. Pittman says

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[49] *See* "Environmental Survey of the Uranium Fuel Cycle" (April, 1974) G-19-20, II-J.A. 736-737.

[50] When Dr. Henry Kendall, an expert witness for Consolidated National Intervenors, tried to raise the risks of terrorism, he met the following reception from the chairman of the hearing board:

> I have just one question . . . with regard to nuclear blackmail and the potential terrorist activities. What I am a little puzzled about is its relevance . . . . I say this with all due respect, Dr. Kendall; I guess those words are

"[v]arious corrective actions" might be taken to prevent a meltdown, none are specified.

Dr. Pittman concludes with the judgments that:

> . . . (1) the program being followed by the industry under AEC regulation and by the AEC offers assurance that the commercial high-level waste will be managed safely from its initial production; (2) the surface storage method, to be used by the AEC, is good for as long as adequate human surveillance and maintenance effort is continued; (3) the probability that work currently under way will demonstrate the use of bedded salt as a safe, acceptable, ultimate disposal method within the next ten to fifteen years is very high; (4) should bedded salt not prove to be acceptable, other acceptable geologic disposal concepts offer reasonable probability of reaching a point of acceptability within two or three decades; and (5) the waste in initial storage will be easily retrievable for either near- or far-term disposal methods when they are developed.

II-J.A. 82. There is no discussion of how "adequate human surveillance and maintenance" can be assured for the periods involved, nor what the long-term costs of such a commitment are, nor of the dangers if surveillance is not maintained.[51] Nor is any explanation offered for Dr. Pittman's optimism regarding bedded salt as a disposal method, since the problems which have surfaced and delayed that program are not mentioned.[52] Nor does the statement anywhere describe what "other

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> exciting reading in the newspapers, but I would like to have [you] indicate the relevance between the responsibilities of the Atomic Energy Commission under the National Environmental Protection Act [sic] in these respects as against, at least, what I read to be the subject matter of your comments in this particular wise, and that is the military and potential security aspects of the transportation of nuclear materials. Do I make myself clear?

An attorney for the intervenors then explained that NEPA requires consideration of more than the "simplistic questions" of "how many fish will get hurt. . . ." The chairman responded:

> You see then, forgive me for using the word, a fusion somehow between what is known as, I understand, the impact on the environment as against the political and military security?

[Attorney]:

> Of course, what is precisely involved in political and military security is that someone threatens to do a heck of a lot of damage to the environment in exchange for something they want.

II-J.A. 213-16.

[51] A subsequent report to the Administrator of ERDA by a four-man task force, including Dr. Pittman, reflects a much less rosy assessment of the problems of reprocessing and waste disposal. NUCLEAR FUEL CYCLE: A REPORT OF THE FUEL CYCLE TASK FORCE, ERDA-33 (March, 1975).

The unanimous task force concluded, *inter alia*, "there are still many technical problems and uncertainties in the overall area of processing of spent fuel and properly managing its radioactive waste", *id.*, 40; "[t]he costs of storage and ultimate disposal . . . are very much higher than had previously been assumed . . . .", *id.*, 46; "[the public] fear[s] that the radioactive waste generated . . . will either be neglected, and thus place an unacceptable hazard potential on mankind, or be managed in a way that will place an unacceptable burden on future generations to assure continued public safety. [T]hese . . . fears . . . are supported by a fair segment of the scientific community—many of whom otherwise support the use of nuclear reactors for generation of electric power", *id.*, 49-50.

[52] *See supra* note 46. Contrary to Dr. Pittman's unexplained optimism, an article in SCIENCE recently termed finding a site for long-term disposal of radioactive wastes "one of the key unresolved problems of the nuclear era." Boffey, *supra* note 46, 190 SCIENCE 361 (Oct. 24, 1975).

acceptable geogologic disposal concepts" are under consideration.

When Dr. Pittman finished, no questions were put to him by the hearing board.[53] No cross-examination was permitted.

Based on Dr. Pittman's statement, the Revised Environmental Survey concludes that the resources consumed in waste storage will be minimal, that "under normal conditions" no radioactivity will be released and that the possibility of a serious accident is "incredible." [54] In short, based on the information in Dr. Pittman's statement, the Commission concluded that the future environmental effects from the disposal of high-level nuclear wastes are negligible. This conclusion is in turn embodied in Table S-3, and further consideration of the issue terminated.

We do not dispute these conclusions. We may not uphold them, however, lacking a thorough explanation and a meaningful opportunity to challenge the judgments underlying them. Our duty is to insure that the reasoning on which such judgments depend, and the data supporting them, are spread out in detail on the public record. Society must depend largely on oversight by the technically-trained members of the agency and the scientific community at large to monitor technical decisions. The problem with the conclusory quality of Dr. Pittman's statement—and the complete absence of any probing of its underlying basis—is that it frustrates oversight by anyone: Commission, intervenors, court, legislature or public. Given the opportunity, Dr. Pittman might have provided convincing answers to many of the questions which his statement leaves untouched. Since that did not occur, however, his judgments must either be accepted at face value, or rejected out of hand.

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[53] One short comment was made concerning commercial disposal of low-level waste, II-J.A. 115, as was the observation, quoted *supra* note 48, regarding failure to provide back-up documentation.

The board's quiescence regarding Dr. Pittman is in marked contrast to its often hostile questioning of expert witnesses for the intervenors. *See, e.g., supra* note 50.

[54] Revised Environmental Survey, *supra* note 42, G-2-G-3, II-J.A. 719-720.

Although the vagueness of the presentation regarding waste disposal made detailed criticism of its specifics impossible, *see* II-J.A. 257, the public interest intervenors did offer a number of more general comments concerning the Commission's approach. They criticized the Commission for a general "failure to distinguish between design objectives on the one hand and performance on the other," II-J.A. 124, noting that no consideration had been given actual experience with storage of wastes generated by weapons production. II-J.A. 272-74. They also questioned confident assertions by the AEC that long-term waste management is feasible, laying particular stress on the immense time periods involved which mock human institutions:

> Except for the storage of liquid wastes in tanks, for which experience from weapons production applies, all proposals for long term storage or disposal of high level waste from the nuclear power industry lie at the research and development stage.
>
> * * * *
>
> The impression is inescapable, in view of the present imprecise state of affairs, that no convincing statements exist regarding the long term environmental impact attending the storage and/or disposal of wastes from fuel reprocessing.
>
> * * * *
>
> The times during which radioactive wastes must remain secure from the biosphere have no parallel

> in human affairs. Eight hundred years are required for fission products alone and millions of years if the fission products continue to be contaminated with transuranic elements at present levels. Fission technology requires that man issue guarantees on events far into the future, and it is not clear in most cases how this can be done. Institutional arrangements do not exist and never have existed to guarantee the monitoring of or attendance upon storage facilities over a millennium. In the range of a million years, serious geological uncertainties arise and even the survival of man may be doubtful. "In perpetuity" has little real meaning in human affairs.

II-J.A. 261-2. They reiterated repeatedly that the problems involved are not merely technical, but involve basic philosophical issues concerning man's ability to make commitments which will require stable social structures for unprecedented periods.[55]

The intervenors pointed out that storing wastes aboveground places a premium on stable human institutions for monitoring and surveillance, II-J.A. 275-76; that until plans for long-term disposal in the salt beds at Lyons, Kansas fell through, *see supra* note 46, the agency had itself rejected the idea of surface storage because of the surveillance problems. II-J.A. 210-11, 287-89.

After reviewing the record, the presiding hearing board isolated several areas of controversy which it felt ought to be addressed by the Commission in issuing the proposed rule. Included were the adequacy of the discus-

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[55] II-J.A. 275-76. An illuminating perspective is provided in D. Farney, *Ominous Problem: What to Do with Radioactive Waste*, 5 SMITHSONIAN MAG. 20, —— (1974):

> The entire recorded history of mankind is but a fraction of the 250,000-year storage time of plutonium. Neanderthal man appeared only about 75,000 years ago.

sion of waste disposal systems,[56] and the need for fuller background documentation. II-J.A. 498.

The Commission disposed of these issues summarily in its statement of basis and purpose accompanying the promulgation of the rule without attempting to articulate responses to any of the points which had been raised regarding waste disposal:

> Considerable information was presented at the hearing on high level waste storage utilizing a retrievable surface storage facility. A description was given of such facility, the normal radiological effluents, and a maximum credible accident.
>
> * * * *
>
> While such a waste storage facility has not been constructed, preliminary conceptual designs have been developed using existing technology based on well established data and techniques.

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[56] The presiding board wrote:

> At the time the Environmental Survey was issued for public comment in the Rulemaking Proceeding, together with the proposed amendments to the Rules, the Survey did not contain data with regard to proposed waste disposal systems. During the course of the oral presentation, the Regulatory Staff offered for the record an extensive presentation by Dr. Frank Pittman regarding various methods for waste disposal which were in the planning stage, and, based upon such planning, assigned various values regarding assumed environmental impact of such waste storage facilities. It was argued that, in all other respects, the Survey dealt with the environmental impact of actual and existing facilities; but that, with respect to waste disposal, the Survey was unreliable in that it dealt with non-existent facilities; . . . .

Ii-J.A. 490.

While this is not an entirely accurate synopsis of the intervenor's position as set out above, it focused the Commission's attention on this aspect of the proceedings.

> The Commission believes that the Survey and hearing record provide an adequate data base for the regulation adopted.

39 Fed.Reg. 14189 (April 22, 1974); II-J.A. 507.1 [unnumbered page following 507].[57] Thus, to the limited extent that any give-and-take was fostered on the nuclear waste issues, the Commission, in its final decision, failed to address major contentions that were raised.

(C.)

In substantial part, the materials uncritically relied on by the Commission in promulgating this rule consist of extremely vague assurances by agency personnel that problems as yet unsolved will be solved. That is an insufficient record to sustain a rule limiting consideration of the environmental effects of nuclear waste disposal to the numerical values in Table S-3. To the extent that uncertainties necessarily underlie predictions of this importance on the frontiers of science and technology, there is a concomitant necessity to confront and explore fully the depth and consequences of

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[57] We note that the Commission also promised to undertake "a more definitive assessment" of the environmental effects of waste storage as more information becomes available through subsequent environmental impact statements. 39 Fed. Reg. 14190 (April 22, 1974); II-J.A. 508.

While that is praiseworthy as an acknowledgment of the Commission's responsibility to reassess its actions in the light of later information, it cannot be used as a bootstrap to excuse the present rule cutting off further consideration in licensing proceedings.

We have already held in *Vermont Yankee, supra* p. 8, that the Commission may not refuse to consider the environmental effects of waste disposal when it licenses an individual reactor simply by promising to consider them later when it licenses facilities for waste disposal. We see no reason why that principle applies with any less force to accomplishing the same result through rulemaking.

such uncertainties. Not only were the generalities relied on in this case not subject to rigorous probing—in any form—but when apparently substantial criticisms were brought to the Commission's attention, it simply ignored them, or brushed them aside without answer. Without a thorough exploration of the problems involved in waste disposal, including past mistakes, and a forthright assessment of the uncertainties and differences in expert opinion, this type of agency action cannot pass muster as reasoned decisionmaking.[58].

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[58] We reject the contention that Table S-3 is itself a "major Federal action" requiring an environmental impact statement. The Commission characterized this rulemaking as merely addressing "a procedural question involving the implementation of NEPA . . . ." 39 Fed.Reg. 14188. *Cf.* Gage v. AEC, 479 F.2d 1214, 1222 n.26 (D.C.Cir. 1973). Petitioners, however, claim Table S-3 has "substantive" effect, since it establishes values for environmental effects on which subsequent licensing decisions may turn. Reply brief at 12. While we agree that Table S-3 may have important decisional consequences by implying that fuel cycle problems are manageable, in the circumstances presented here, we do not believe these implications ripen into a proposal for agency action until they are incorporated into individual licensing decisions. *Compare* Aberdeen & Rockfish R.C. v. SCRAP, 422 U.S. 289, 320 (1975) *with* SIPI, *supra* note 11, *and* Sierra Club v. Morton, 514 F.2d 856 (D.C.Cir. 1975), *rev'd sub nom.* Kleppe v. Sierra Club, 44 U.S.L.W. 5104 (U.S., June 28, 1976). At that point an impact statement will be prepared with regard to the licensing decision. We do not read the statute as requiring more.

Petitioners also argue that Table S-3 violates NEPA because it is incomprehensible to "non-technical minds." Environmental Defense Fund v. Corp of Engineers, 348 F.Supp. 916, 933 (W.D. Miss.), *aff'd.*, 492 F.2d 1123 (5th Cir. 1972). We do not reach that issue. The defects, if any, may be cured by fuller explanation in a revised statement of basis and purpose, or in subsequent NEPA statements incorporating Table S-3.

[Continued]

Many procedural devices for creating a genuine dialogue on these issues were available to the agency—including informal conferences between intervenors and staff, document discovery, interrogatories, technical advisory committees comprised of outside experts with differing perspectives, limited cross-examination, funding independent research by intervenors, detailed annotation of technical reports, surveys of existing literature, memoranda explaining methodology. We do not presume to intrude on the agency's province by dictating to it which, if any, of these devices it must adopt to flesh out the record. It may be that no combination of the procedures mentioned above will prove adequate, and the agency will be required to develop new procedures to accomplish the innovative task of implementing NEPA through rulemaking. On the other hand, the procedures the agency adopted in this case, if administered in a more sensitive, deliberate manner, might suffice.[59] Whatever techniques

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[58] [Continued]

Finally, we reject the related argument that plenary consideration of alternatives was necessary in this proceeding. We agree with the Commission that this may be deferred until action is proposed to license particular disposal facilities. For purposes of this proceeding, provided a sufficiently conservative and credible assessment of a particular waste disposal method is used, it is not material that another method might turn out to be even more desirable. *See supra* note 13. Of course, we do not exclude the possibility that limited consideration of certain alternatives (*e.g.*, the consequences of not proceeding at all) may be necessary to meaningful judgments in a proceeding such as the present.

[59] Agencies are always free to adopt "hybrid procedures" beyond the minima prescribed by 5 U.S.C. § 553, and commonly do. United States v. Florida East Coast Ry., 410 U.S. 224, 236 n.10 (1973). In this case, the Commission elected to provide certain hybrid procedures in addition to those required by § 553—oral hearings and questioning by a presiding board. By listing other techniques, *supra* p. 39, which might aid the Commission in compiling an adequate record, we do not intimate that it must adopt any of them. What is of

the Commission adopts, before it promulgates a rule limiting further consideration of waste disposal and reprocessing issues, it must in one way or another generate a record in which the factual issues are fully developed.

Our colleague, concurring specially, expresses the view that there is "little to be gained other than delay" by remanding for additional proceedings, since it is "almost inevitable" that the Commission will reach the same result "after fully considering the problems and alternative methods of waste disposal."[60] Even if true, that would only supply an additional reason to require the Commission to acknowledge the risks and problems, as well as lay bare its own reasoning. Agencies are less likely

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concern to us is that the record after remand disclose a thorough ventilation of the issues.

On paper, the procedures used to supplement § 553 here were virtually identical to those approved by the court in International Harvester v. Ruckelshaus, *supra* note 23, 478 F.2d at 631, in which oral statements were allowed and the hearing board was authorized to ask questions submitted by the parties. However, in practice the procedures were administered quite differently in *International Harvester:* "[T]he hearing officers did not propound the pre-submitted questions like robots; they were charged with conducting a hearing for the purpose of focusing information needed for decision and they quite appropriately 'followed up' on questions." *Id.* In this case the board members asked no questions whatsoever of Dr. Pittman. *See supra* note 53.

[60] Concur at 5. According to Judge Tamm, on remand "the Commission may or may not adopt one of the majority's [procedural] suggestions, but will in any case seek to comply by mechanically generating more 'negative' information respecting current problems with disposal of high level radioactive wastes and then will 'overcome' this information with citations to favorable studies and articles." *Id.*, 4.

Stripped of rhetoric, this means that the Commission may reach the same result on an adequate record—which, of course, is why we remand rather than reverse.

to persist in the face of information publicly exposing the fallacies, if any, in their position. In any event, NEPA does not guarantee a particular outcome on the merits; rather, the statute mandates only a "careful and informed decisionmaking process" to enlighten the decisionmaker and the public.[61] In the rulemaking context, that requires the Commission to identify and address information contrary to its own position, to articulate its reasoning and to specify the evidene on which it relies.[62] The Commission may well reach the same conclusion on remand. But if it does so on such a record, the Congress, the courts, and the public will all know where we stand.

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[61] *See* Calvert Cliffs' Coordinating Comm. v. AEC, *supra* note 14, 449 F.2d at 1115. *See also,* Comm. for Nuclear Responsibility, Inc. v. Seaborg, *supra,* 463 F.2d at 787; NRDC v. Morton, *supra* note 15, 458 F.2d at 833.

[62] Evidently Judge Tamm would permit Dr. Pittman to supplement his testimony without giving those who disagree an opportunity to criticize or comment on the new material (*e.g.*, "without reopening the oral proceeding," Concur at 3). We would not agree.

Unlike explanation of the *Commission's* rationale, Dr. Pittman's testimony is part of the evidentiary support underlying the proposed rule. *Cf.* Concur at 7. Both rudimentary procedural fairness and § 553 require that the evidentiary "basis" for a proposed rule be subject to public scrutiny and comment. *See* Portland Cement Ass'n v. Ruckelshaus, *supra* note 37, 486 F.2d at 393 n.67; Mobil Oil Corp. v. FPC, *supra* note 23, 483 F.2d at 1251 n.39. This variant of the traditional adversary process permits other experts, and the public, to bring to bear the purifying effect of their comments.

At least where the existing record is inadequate to sustain a rule, an agency cannot buttress its case with additional data not subject to public comment. "If a particular rule rests on an extensive analysis of data or a complex prediction . . . the agency should not rely on any research methods or data which were not presented to the interested parties for comment or criticism." Wright, *supra* note 23, 59 CORNELL L.REV. at 383, n.34 (1974).

It has become a commonplace among proponents of nuclear power to lament public ignorance.[63] The public—the "guinea pigs" who will bear the consequences of either resolution of the nuclear controversy—is apprehensive. But public concern will not be quieted by proceedings like the present.

> I know no safe depository of the ultimate powers of the society but the people themselves; and if we think them not enlightened enough to exercise their control with a wholesome discretion, the remedy is not to take it from them, but to inform their discretion.[64]

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[63] *See, e.g.*, Remarks by USNRC Commissioner Edward A. Mason at MIT (March 4, 1976) *quoted* SCIENCE & GOV. RPT., 4 (April 1, 1976):

> So the biggest problem impeding the contribution of nuclear power in meeting the nation's energy needs seems to me to be the lack of informed public understanding. . . .
>
> * * * *

Edward Teller, "Nuclear Salvation," NEWSWEEK (May 17, 1976) at 15:

> Indeed, there is no better subject with which to scare people than nuclear energy. What is new, what is not completely understood, is always frightening. But nuclear energy is a special case. It comes from a remote part of research that, in the minds of many people, borders on science fiction. It was developed in wartime and shrouded in secrecy. It came to the attention of mankind when, in two strokes, more than 100,000 people were killed in the final days of a terrible war. . . . Can we, in our democratic society, overcome unreasonable fears?

[64] Thomas Jefferson, Letter to William Charles Jarvis (Sept. 28, 1820).

The Commission's action in cutting off consideration of waste disposal and reprocessing issues in licensing proceedings based on the cursory development of the facts which occurred in this proceeding was capricious and arbitrary. The portions of the rule pertaining to these matters are set aside and remanded.[65]

[65] We are aware of suggestions that where agency action is based on an inadequate record, the appropriate remedy may be to remand for supplementation rather than a declaration that the rule or order is invalid. *See* Leventhal, *Environmental Decisionmaking and the Role of the Courts*, 122 U.PA.L.REV. 509, 539 (1974). *But cf.* Camp v. Pitts, 411 U.S. 138, 143 (1973): If the decision of the agency "is not sustainable on the administrative record made, then the . . . decision *must be vacated* and the matter remanded . . . for further consideration." *quoted* F.P.C. v. Transcontinental Gas Pipe Line Corp., *supra* note 26, 96 S.Ct. at 582 [emphasis added].

Separate Statement of Chief Judge BAZELON:

I add a word of my own on some of the broader implications of Judge Tamm's concurrence.

I agree that courts should be reluctant to impose particular procedures on an agency. For example, requiring cross-examination in a rulemaking proceeding is radical therapy, which may cause the patient to suffer a slow, painful death. "There is a not insignificant potential for havoc . . . [which is] likely to be disproportionate to the values achieved. . . ." *International Harvester Co. v. Ruckelshaus*, 478 F.2d 615, 631 (D.C.Cir. 1973). But I reject the implication that any techniques beyond rudimentary notice and comment are needless "over-formalization" of informal rulemaking. Concur at 5. Unhappily, no such bright line can be drawn between rulemaking and adjudicatory proceedings.[1]

[1] The concurrence relies on Wright, *The Courts and the Rulemaking Process: The Limits of Judicial Review*, 59 CORNELL L.REV. 375 (1974), which explicitly assumes an idealized model differentiating sharply between "policy-type rules or standards, on the one hand, and proceedings designed to adjudicate particular cases on the other." *Id.*, 386. This model posits that accurately determining facts is relatively unimportant in rulemaking because the "ultimate shape of the rule seldom 'follows from the facts.'" *Id.*, 379 n.15. Based on this conceptual distinction, drawn from Bi-Metallic Investment Co. v. State Bd. of Equalization, 239 U.S. 441 (1915), it is argued "An adjudication is fair to the individual only if the facts are accurately found. . . . [I]n the rulemaking context, fairness is not identified with accuracy, and procedures designed to maximize accuracy at the cost of all other values are simply inappropriate." *Id.*, 379.

With all due respect, this assumes away the hybrid rulemaking problem which arises primarily when rulemaking procedures are used in contexts where accurate fact-finding *is* of high relative importance. *See infra* p.2 and n.3.

The purpose of rulemaking was to allow public input on policy, whereas adjudication was designed to resolve disputed facts. *See supra* note 1. However, in response to the "paralysis" of the administrative process in the last decade, rulemaking has been expanded into fact-intensive areas previously thought to require adjudicatory procedures.[2] Administrative proceedings are now common which do not fit neatly into either the rulemaking or adjudicatory category. These new proceedings are "hybrids" in the sense that they involve issues of general applicability which can be treated efficiently only in generic proceedings, but nonetheless involve factual components of such relative importance that a greater assurance of accuracy is required than that which accompanies notice and comment procedures.[3]

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[2] *See, e.g.*, United States v. Allegheny-Ludlum Steel Corp., 406 U.S. 742 (1972); United States v. Florida East Coast Ry., 410 U.S. 224 (1973) (ratemaking).

[3] The development of scientific or technical standards is a prime example. These decisions may involve both assessing scientific evidence, and also a "legislative" or policy component as to what level of risk is "safe," and how uncertainties are to be valued. *See* Handler, *A Rebuttal: The Need for a Sufficient Scientific Base for Governmental Regulation*, 43 GEO.WASH.L.REV. 808, 809 (1975).

The relative centrality of the fact-finding and policy-making components may vary depending on the precise regulatory scheme and the state of knowledge. *Compare* Ethyl Corp. v. EPA, No. 73-2205 (D.C.Cir., March 19, 1976) (en banc) (legislative policy decision) *with* Portland Cement Ass'n v. Ruckelshaus, 486 F.2d 375, 390-402 (D.C.Cir. 1973), *cert. denied*, 417 U.S. 921 (1974).

The present proceeding was devoted almost entirely to technical fact-finding. The Commission characterized its purpose as data-gathering, rather than an analysis of alternatives or costs and benefits, 39 Fed.Reg. 14188, and specifically disclaimed that the values arrived at represented "safe" operating limits. *Id.*, 14190. This was simply not, as Judge Tamm states, a proceeding to arrive at an "administrative

The need for reliable fact-finding does not necessarily imply transplanting trial-type procedures. Factual issues in hybrid proceedings tend to be complex scientific or technical ones involving mathematical or experimental data, or other "legislative facts" [4] peculiarly inappropriate for trial-type procedures. Agencies should innovate procedural formats responsive to the new problems created by hybrid rulemaking. Some agencies (such as FDA and EPA) have already begun to do so.[5]

Decisions in areas touching the environment or medicine affect the lives and health of all. These interests, like the First Amendment, have "always had a special claim

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weighing of risks and benefits of additional reactors," Concur at 7, or to decide "whether licensing an additional reactor is worth the additional environmental risk . . . ." Concur at 5.

[4] *See* 2 Davis, Administrative Law Treatise § 15.03 (1958):

> When a court or an agency finds facts concerning the immediate parties—who did what, where, when, how, and with what motive or intent—the court or agency is performing an adjudicative function, and the facts are conveniently called adjudicative facts. . . .
>
> Stated in other terms, the adjudicative facts are those to which the law is applied in the process of adjudication. They are the facts that normally go to the jury in a jury case. They relate to the parties, their activities, their properties, their businesses. Legislative facts are the facts which help the tribunal determine the content of law and of policy and help the tribunal to exercise its judgment or discretion in determining what course of action to take. Legislative facts are ordinarily general and do not concern the immediate parties.

[5] Judge Tamm raises the specter that the "entirely predictable" response by administrators to "procedural refinements" will be so many adjudicatory procedures that "the advantages of informal rulemaking as an administrative tool. are lost in a heap of judicially imposed procedure." Concur

to judicial protection." [6] Consequently, more precision may be required than the less rigorous development of scientific facts which may attend notice and comment procedures.

Despite the controversy surrounding the proper standard of review in informal rulemaking cases, *see* Concur at n.2, there is less disagreement on this essential point than meets the eye. With customary perspicacity, Judge Friendly has observed that often it does not really matter much whether a court says the record is remanded because the procedures used did not develop sufficient evidence, or because the procedures were inadequate.[7] *From*

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at 6. Adjudicatory forms are no talisman which would guarantee an agency an adequate record.

Moreover, Williams, *"Hybrid Rulemaking" Under the Administrative Procedure Act: A Legal and Empirical Analysis*, 42 U.CHI.L.REV. 401 (1975), points out that the hybrid rulemaking cases have not in fact had that kind of impact on agency behavior. *Id.*, 425, 428, 448. Contrary to Judge Tamm's statement that cross-examination afforded only delay and something to be traded off for "substantative concessions," Concur at n.6, Williams actually discovered that the parties were able to agree on *procedural* innovations which better met their needs and were less time-consuming than cross-examination. *See* Majority Op., *supra* note 28.

[6] Environmental Defense Fund, Inc. v. Ruckelshaus, 439 F.2d 584, 598 (D.C.Cir. 1971) (Bazelon, C.J.). *See also* Leventhal, *Environmental Decisionmaking and the Role of the Courts*, 122 U.PA.L.REV. 509, 512-13 (1974).

[7] In discussing the article by Judge Wright, *supra* note 2, on which the concurrence relies, Judge Friendly writes:

> A judge not in the arena must wonder whether the war Judge Wright is waging with his colleagues is not in some degree semantic. . . . One can hardly quarrel with the conclusion that if a reviewing court finds that the procedures followed by the agency in adopting a rule have not produced a body of evidence enabling it to pronounce the required benediction, the court must remand. . . . It is thus not too consequential whether a court invalidates a rule on the ground that the procedures have

the standpoint of the administrator, the point is the same: the procedures prescribed by § 553 will not automatically produce an adequate record. Thus, although Judge Tamm vehemently opposes the concept of procedural review of informal rulemaking, he agrees to send this case back for a fuller development of the facts *even though the dictates of § 553 were followed.*[8]

Of course, important differences remain *from the standpoint of a reviewing court.* I am convinced that in highly technical areas, where judges are institutionally incompetent to weigh evidence for themselves, a focus on agency procedures will prove less intrusive, and more likely to improve the quality of decisionmaking, than judges "steeping" themselves "in technical matters to determine whether the agency has exercised a reasoned discretion." *See Ethyl Corp.* v. *EPA*, No. 73-2205 (D.C.Cir., March 19, 1976)

> not developed substantial evidence to support it or even evidence adequate to rebut a claim that it is arbitrary and capricious, or, instead, takes the route of prescribing ad hoc procedural requirements in addition to those of section 553. . . . Both roads lead to the conclusion that an administrator engaged in rulemaking governed by the APA cannot always be sure that rudimentary notice and comment procedures, even if they measure up to Judge Wright's salutary specifications, will always suffice.

Friendly, *Some Kind of Hearing*, 123 U.PA.L.REV. 1267, 1313-14 (1975) [footnotes omitted].

[8] The logic of Judge Tamm's position that the "deficiency" here is not with the procedures used to make a record, just with the "record generated," Concur at 2, totally escapes me.

Judge Tamm also criticizes the court for failing to tell the Commission "in precise terms" how to achieve a "thorough ventilation" of the factual issues. Concur at 3. He apparently finds greater specificity in an instruction to the Commission to provide "an explanation of the basis" of its conclusions. Concur at 7.

(en banc) (Bazelon, C.J., concurring), *cert. denied*, 44 U.S.L.W. 3719 (June 10, 1976).[9]

[9] *Cf.* Lathan v. Brinegar, 506 F.2d 677, 693 (9th Cir. 1974) (en banc):

> We think that the courts will better perform their necessarily limited role in enforcing NEPA if they apply [the "without observance of procedure required by law" standard of 5 U.S.C.] § 706(2)(D) in reviewing environmental impact statements for compliance with NEPA than if thy [sic] confine themselves within the straight jacket of [the "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law" standard of 5 U.S.C.] § 706(2)(A).

See also Ohio v. Wyandotte Chem. Corp., 401 U.S. 493, 504 (1971) (original jurisdiction declined in pollution case involving complex, novel and technical factual questions):

> . . . Ohio is raising factual questions that are essentially ones of first impression to the scientists. The notion that appellate judges, even with the assistance of a most competent Special Master, might appropriately undertake at this time to unravel these complexities is, to say the least, unrealistic. Nor would it suffice to impose on Ohio an unusually high standard of proof. That . . . would not lessen the complexity of the task of preparing responsibly to exercise our judgment, or the serious drain on the resources of this Court it would entail.

TAMM, *Circuit Judge, separate statement concurring in result*:

Licensing a nuclear reactor unquestionably constitutes a "major Federal action[] significantly affecting the quality of the human environment" requiring a "detailed" environmental impact statement under section 102 (2)(C) of NEPA, 42 U.S.C. § 4332(2)(C)(1970). Approval of such a facility, which inevitably will produce high level radioactive wastes, some of which must be isolated from the "biosphere" for a quarter of a million years, undeniably necessitates an "irreversible and irretrievable commitment[] of resources" within the meaning of the Act. 42 U.S.C. § 4332(2)(C)(v). A panel of this court has previously indicated that NEPA requires potential environmental problems of this magnitude to be dealt with in advance of such a substantial commitment, not ignored until new commitments inevitably follow from the old. *See, e.g., Calvert Cliffs' Coordinating Comm. v. AEC*, 449 F.2d 1109, 1128 (D.C. Cir. 1971).[1] I agree with the majority that NEPA requires the Commission fully to assure itself that safe and adequate storage methods are technologically and economically feasible. It forbids reckless decisions to mortgage the future for the present, glibly assuring critics that technological advancement can be counted upon to save us from the consequences of our decisions. I further agree with the conclusion of the majority that it is impossible to determine from the record before us whether the Commission has fulfilled its statutory obli-

[1] A major purpose of NEPA was to avoid the limiting effect of incremental decisionmaking by confronting environmental problems before foreclosing alternative methods of dealing with them. *See* S. Rep. No. 296, 91st Cong., 1st Sess. 5 (1969), *quoted in* Majority 9. To this end, NEPA requires a thorough cost-benefit study in each case before undertaking major federal action affecting the quality of the human environment. Calvert Cliffs' Coordinating Comm. v. AEC, *supra* at 1128.

gation under NEPA in adopting the S-3 table, in effect deciding that the incremental environmental effect of storing the waste of an additional nuclear reactor is negligible, or whether it has uncritically adopted as its own the undocumented conclusions of a single witness that the waste storage issue is a "non-problem" with which the Commission need hardly concern itself at this time. Accordingly, the inadequacy of the record demands that we remand this case to the Commission in order to ensure that it has taken a hard look at the waste storage issue. I cannot, however, without qualification, endorse the approach the majority has taken to reach this result or its suggested disposition on remand.

The majority appears to require the Commission to institute further procedures of a more adversarial nature than those customarily required for informal rulemaking by the Administrative Procedure Act, 5 U.S.C. § 553 (1970).[2] The Commission chose to proceed by "hybrid" rulemaking below, allowing petitioners to present oral arguments before the Commission and subjecting participants to questions, but not permitting participants to cross-examine. Majority note 59. By so proceeding the Commission exceeded the minimum procedural requirements of section 553.[3] In my view, the deficiency

[2] The standard of review under section 553 has been the subject of considerable discussion in recent years, especially within this judicial circuit. *See, e.g.*, the cases and articles cited in Majority note 23.

[3] Section 553 imposes only three obligations on the rulemaker. First the rulemaker must give adequate and effective notice of "either the terms or substance of the proposed rule or a description of the subjects and issues involved." Secondly, he must "give interested persons an opportunity to participate . . . through submission of written data, views, or arguments with or without opportunity for oral presentation." Finally, the rulemaker must "incorporate in the rules adopted a concise and general statement of their basis and purpose." 5 U.S.C. § 553 (1970). *See generally* Verkuil, *Judicial Review of Informal Rulemaking*, 60 VA. L. REV. 185 (1974).

The "concise and general statement" required by section 553 must be sufficiently complete and detailed to enable the court to accomplish its reviewing function, assuring itself that the agency has engaged in reasoned decisionmaking, has given serious thought to alternative rulings, and has provided reasoned explanations for controversial normative and empirical determinations. In short, "the reviewing court must satisfy itself that the requisite dialogue occurred and that it was not a sham." Wright, *The Courts and the Rulemaking Process: The Limits of Judicial Review*, 59 CORNELL L. REV. 375, 381 (1974).

[4] The majority also recognizes that the procedures utilized by the Commission might suffice "if administered in a more sensitive, deliberate manner." Majority 40.

[5] *See* Environmental Defense Fund, Inc. v. Corps of Engineers, 470 F.2d 289 (8th Cir.), *cert. denied*, 412 U.S. 931 (1972), in which the Eighth Circuit Court of Appeals held that, although NEPA requires agencies to evaluate objectively

is not with the *type* of proceeding below, but with the completeness of the record generated.[4] More procedure will not, in this case, guarantee a better record, and a better record can be generated without reopening the oral proceeding at this time. We cannot conclude confidently from this record whether the Commission's staff considered all relevant factors, including the facts petitioners call to our attention, in reaching the figures embodied in Table S-3; nor can we conclude from Dr. Pittman's oral statements, substantially devoid of documentation, whether these figures represented conclusions drawn from more exhaustive research into the waste storage problem conducted by the head of the Commission division charged with this task. If Dr. Pittman's conclusions were so based, I believe the Commission is entitled to accept them, provided, of course, it is assured that they are reasonably objective.[5]

I am also troubled by two other aspects of the majority opinion. First, I am distressed because I believe the majority opinion fails to inform the Commission in precise terms what it must do in order to comply with the court's ad hoc standard of review.[6] The majority sends the waste storage issue back to the Commission for a "thorough ventilation." This language, of course, means very little in procedural terms. In order to aid the Commission in filling in the gaps in the record, the majority enumerates a number of procedural alternatives in varying degrees of formality, some less intrusive into agency prerogatives than others. Majority 39. Then, heeding the Supreme Court's admonition in *FPC v. Transcontinental Gas Pipe Line Corp.*, 96 S.Ct. 579 (1976) (per curiam), that we may not, except in extraordinary circumstances, specify agency procedures on remand, the majority declines to give the Commission any direction as to which procedure or combination of them, will suffice. The Commission is thus left to decide which to adopt, further confused by the majority's statement that, "It may be that no combination of the procedures mentioned above will prove adequate, and the agency will be required to develop new procedures to accomplish the innovative task of implementing NEPA through rulemaking." Majority 39. Such specificity resembles a

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their projects, it does not require agency officials to be subjectively impartial. In other words,

> NEPA assumes as inevitable an institutional bias within an agency . . . and erects the procedural requirements of § 102 to insure that there is no way the decision-maker can fail to note the facts and understand the various arguments advanced by the plaintiffs if he carefully reviews the entire environmental impact statement.

Id. at 295 (quotation marks and citation omitted).

[6] Judicial imposition of procedural requirements on an ad hoc basis is criticized in Wright, *supra*.

standardized test in which there are numerous possible answers, including "all of the above," "none of the above," or "various combinations of the above." The result, I believe, is entirely predictable: the Commission may or may not adopt one of the majority's suggestions, but will in any case seek to comply by mechanically generating more "negative" information respecting current problems with disposal of high level radioactive wastes and then will "overcome" this information with citations to favorable studies and articles. Ultimately, of course, the Commission must decide which information to accept and which to reject, regardless of the type of procedure used. The majority opinion appears to recognize as much when it volunteers that, "On the other hand, the procedures the agency adopted in this case, if adminstered in a more sensitive, deliberate manner, might suffice." Majority 40 (citation omitted). This time, however, the decision whether licensing an additional reactor is worth the additional environmental risk would be one of policy or risk assessment and, consequently, would be reviewable only according to the customary "arbitrary, capricious" standard. *Amoco Oil Co. v. Environmental Protection Agency*, 501 F.2d 722, 741 (1974). I believe it almost inevitable that, after fully considering the problems and alternative methods of waste disposal and storage, the Commission will reach the same conclusion and therefore see little to be gained other than delay from imposing increased adversarial procedures in excess of those customarily required.[7]

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[7] It has been argued that those cases in which we have granted a limited right of cross-examination on remand have afforded little relief other than delay and a tool with which to bargain for substantive concessions. Williams, *"Hybrid Rulemaking" Under the Administrative Procedure Act: A Legal and Empirical Analysis*, 42 U. CHI. L. REV. 401, 436-48. It would seem, therefore, that the right of cross-examination at a rulemaking proceeding frequently is better to have and be denied than to utilize.

This brings me to my second, related concern with the majority's approach. I believe the majority's insistence upon increased adversariness and procedural rigidity, uneasily combined with its non-direction toward any specific procedures, continues a distressing trend toward over-formalization of the administrative decision-making process which ultimately will impair its utility. As Judge Wright has recently noted, the administrative response to overuse of judicial imposition of such ad hoc procedural refinements is easily foreseeable. Fearing reversal, administrators will tend to over-formalize, clothing their actions "in the full wardrobe of adjudicatory procedures," until the advantages of informal rulemaking as an administrative tool are lost in a heap of judicially imposed procedure. Wright, *The Courts and the Rulemaking Process: The Limits of Judicial Review*, 59 CORNELL L. REV. 375, 387-88 (1974).[8] The majority's

[8] A further problem with over-reliance on the hybrid rulemaking approach has its roots in the hostility of some judges to all forms of substantive review of agency decisions. The line between substantive and procedural review is, of course, a hazy one. The same judges who most vehemently protest against judicial intrusions into the substance of administrative action, especially in highly technical areas, may not hesitate to require relatively more procedure of an agency when they dislike its substantive result. There is, I believe, a danger that judges will feel less restrained in requiring agencies to adopt procedures in excess of those required by the APA when review is couched in procedural, rather than substantive, terms. The preoccupation of the majority opinion in this case with the half-life of the plutonium atom and the myriad of geological and other technical difficulties one faces in attempting to safely store a highly toxic substance for a quarter of a million years demonstrates that judges cannot avoid the task of immersing themselves in difficult and often technical matters in order to evaluate administrative action and assure themselves that the agency has in fact dealt with all major issues. Because the relative environmental importance of the waste disposal issue before us is the subject of some

reliance upon the so-called "hybrid rulemaking" cases[9] for its conclusion that the procedures prescribed by section 553 are inadequate for resolution of the complex issues involved in this case and its insistence that the Commission adopt more formal adversary procedures are, I believe, misplaced. Admittedly, there are rare cases in which "basic considerations of fairness" require procedures more adversarial than those prescribed by section 553. *See* Majority 14-15, *quoting from* Respondent's Brief at 13-14. I cannot agree, however, that this case requires us to reach this issue. Remanding an agency decision with instructions to initiate such procedures is an extraordinary judicial remedy which, I believe, should be reserved for extraordinary cases.

The appropriate remedy at this point is not to impose ad hoc procedural requirements in an attempt to raise the level of petitioners' participation, already adequate under section 553, but to remand for an explanation of the basis of Dr. Pittman's statements and of the staff's numerical conclusions,[10] *i.e.* for the documentation which the majority finds so conspicuously lacking.[11] The

controversy, arguments about whether our focus here is "procedural" or "substantive" may be more semantic than determinative.

[9] *See* the cases cited at note 23 of the majority opinion.

[10] As the majority states, due process considerations probably mandate that petitioners be allowed to comment upon any additional information assembled by the Commission. Neither the Constitution nor the Administrative Procedure Act, however, directs the Commission to allow additional oral presentation, cross-examination, or any other procedures in addition to those required by section 553.

[11] The extent of the required statement of basis may vary, of course, according to the precise demands and issues of each particular case, but, "[a]t a minimum, the statement should refer to relevant submissions by interested parties and should

Commission should be able to supply the court with a statement of the methods by which its staff arrived at the figures embodied in Table S-3 and by which Dr. Pitt-

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rebut or accept these submissions in an orderly fashion." Wright, *supra* at 381. This court has also distinguished between factual determinations and policy choices more peculiarly within the expertise of the administrative agency. In the former case, we commonly have insisted upon sufficient attention to the facts to enable the reviewing court to ascertain the underlying rationality of the resultant regulations. Amoco Oil Co. v. Environmental Protection Agency, 501 F.2d 722 (D.C. Cir.), *cert. denied*, 417 U.S. 921 (1974). In contrast,

> [w]here . . . the regulations turn on choices of policy, on an assessment of risks, or on predictions dealing with matters on the frontiers of scientific knowledge, we will demand adequate reasons and explanations, but not "findings" of the sort familiar from the world of adjudication.

Id. at 741.

Often, of course, an agency ruling will encompass both factual determinations and policy choices. This is such a case. For example, the decision to treat the waste storage issue through generic rulemaking because it is common to all licensing decisions is clearly a policy determination within the agency's special expertise which we should review only for clear abuse of discretion. *See* NLRB v. Bell Aerospace Co., 416 U.S. 267 (1974). The decision to license a particular reactor is also a policy or "assessment of risks" decision within the agency's discretion, provided it has adequately considered all underlying factual issues, including the waste storage issue, and has determined to its own satisfaction that safe methods of production and waste storage are already technologically and economically feasible. Finally, once so assured, the decision to postpone until later the question as to which of several feasible methods should be utilized is also, I believe, a policy, or risk assessment, decision.

This case, however, involves related factual determinations for which we must find support in the statement of basis required by section 553. Of particular relevance here is Table S-3, which reduces the environmental effect of licensing an additional reactor to certain numerical values and, in ef-

man concluded that the waste storage problem is already technologically and economically soluable. If it cannot, then we will have no choice but to invalidate the Commission's rule under the "arbitrary, capricious" standard; if it can, we should defer to the administrative weighing of risks and benefits of additional reactors.

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fect, concludes that it is negligible. The claimed bases for the judgments expressed in numerical terms in Table S-3 are the data assembled by the staff in the draft Environmental Survey, adopted without substantial modification as Table S-3 and thus embodied in the final rule. As the majority indicates, neither the Survey itself, the back-up documentation to which it refers, nor the oral and written testimony offered at the hearing adequately supports these factual conclusions with respect to the waste disposal issue. Majority 21-22. The detailed explanation which characterizes other portions of the Environmental Survey is notably absent from this portion.

DOCKET No. 50-271

ALAB-56

IN THE MATTER OF VERMONT YANKEE NUCLEAR POWER CORPORATION (VERMONT YANKEE NUCLEAR POWER STATION)

Issued June 6, 1972

ATOMIC SAFETY AND LICENSING APPEAL BOARD:
SIDNEY G. KINGSLEY, *Chairman.*
DR. JOHN H. BUCK.
DR. LAWRENCE R. QUARLES.

MEMORANDUM AND ORDER

During the course of extended hearings for the issuance of an operating license for this nuclear power station,[1] the Atomic Safety and Licensing Board has referred to us on December 29, 1971, under Subsection 2.730(f) of the Rules of Practice, 10 CFR Part 2, certain rulings concerning the scope of environmental review under 10 CFR Part 50, Appendix D, as revised September 9, 1971.[2]

The referral by the Licensing Board does not explicitly identify the questions to which it seeks answers. It cites the Board's rulings at certain pages of the transcript. Those rulings refer in general terms to proceedings which we have sought out in the record.

[1] The provisional construction permit was issued on December 11, 1967.

[2] 36 Fed. Reg. 18071. See also 36 Fed. Reg. 18716, September 21, 1971; 36 Fed. Reg. 19153, September 30, 1971; 36 Fed. Reg. 21579, November 11, 1971; 36 Fed. Reg. 23900, December 16, 1971; 37 Fed. Reg. S64, January 20, 1972; 37 Fed. Reg. 9619, May 13, 1972; 37 Fed. Reg. 9779, May 17, 1972.

The referral originated in a motion of the intervenors Natural Resources Defense Council, Inc. (NRDC). It has two principal aspects:

a. The Board has referred to us oral rulings in which it sustained objections to questions and to interrogatories concerning the levels of radioactivity and the associated hazards which might be included in the operations of a reprocessing plant to which irradiated fuel from the Vermont Yankee plant might ultimately be sent for reprocessing, and the transportation of high level radioactive wastes from such a reprocessing plant to an ultimate storage area.

b. The Board has also referred a motion of NRDC which requested that, under Subsection 2.785(d) of the Rules of Practice, the substantive questions be certified to the Atomic Energy Commission on the asserted ground that a broad policy question is involved which should be determined by the Commission.

The original motion of NRDC sought orders of the Licensing Board which would open for consideration in the proceeding the environmental impact of spent fuel transportation and reprocessing, the disposition and ultimate storage of high level wastes, and the disposal of the contaminated structures of the nuclear generating station at the end of its useful life when it is decommissioned.

The Licensing Board denied the motion of NRDC, which, after the decision in *Calvert Cliff's Coordinating Committee, Inc.* v. *Atomic Energy Commission,* 449 F.2d 1109 (D.C. Cir. 1971), presented its "Renewed Motion . . . for Full Consideration of Waste Handling Issues", for orders directing the staff to prepare a new detailed statement on environmental considerations, directing the applicant to respond to certain related specific interrogatories, and permitting NRDC to introduce evidence by direct testimony and cross-examination of witnesses. The motion was supported by the intervenor New England Coalition on Nuclear Pollution.

We consider at the outset the request that the Appeal Board certify to the Commission the substantive questions which are now in issue.

Under paragraph 2.785(a)(1) of its Rules of Practice, 10 CFR Part 2, the Commission has delegated to the Appeal Board the authority and the review function which would otherwise be exercised and performed by the Commission itself. See 36 Fed. Reg. 3837, 3838, February 27, 1971. Having been given the responsibility of relieving the Commission of this burden, it is our obligation to carry it out, subject to the Commission's review, unless we conclude that we are incapable of doing so without prejudice to the Commission's performance of its duties. See *1969 Annual Report, Administrative Conference of the United States,* pp. 17, 38-39. If the Commission in its wisdom should conclude that it should review on its own motion a decision or action of this Appeal Board, it will doubtless exercise its reserved power to do so. 10 CFR Section 2.786.

The motion of NRDC and the related rulings of the Licensing Board raise the question of the scope of Appendix D of Part 50 of the Commission's regulations. Appendix D is patterned upon the language of Section 102 of the National Environmental Policy Act of 1969, P.L. 91-190, 43 U.S.C. 4321 *et seq.* The Commission initially published Appendix D as an interim statement of general principles and procedures under that Act (35 Fed. Reg. 18469, December 4, 1970; see also 35 Fed. Reg. 5463, April 2, 1970). After the decision of the United States Court of Appeals for the District of Columbia Circuit in *Calvert Cliffs' Coordinating Committee* v. *Atomic Energy Commission,* 449 F.2d 1109 (July 23, 1971), it published a revised Appendix D (36 Fed. Reg. 18071, September 9, 1971).

The issues presented by the NRDC motion and the referred rulings, as they now lie before this Appeal Board,

appear to be whether the Licensing Board is to consider the environmental hazards of transporting and reprocessing spent fuel from the facility, transporting and disposing of the high level wastes issuing from reprocessing, transportation and storage of low level wastes, and ultimate disposal of the contaminated structures of the facility itself at the end of its useful life; and whether the detailed environmental impact statement prepared by the staff must address each of these issues.

We have concluded that the Licensing Board should consider the transportation of spent fuel to a reprocessing plant, and the transportation from the nuclear power plant of high level wastes as well as of low level wastes, but should not consider in this proceeding operations of a reprocessing plant or the disposal of wastes resulting from reprocessing. We have also concluded that the environmental effects to be addressed by the staff should extend to and be limited to the same scope.

During the course of the proceeding NRDC has served voluminous interrogatories on various subjects, including radioactive wastes and their disposal. The applicant has answered almost all of them, but has declined to answer two concerning reprocessing and the disposal of wastes from a reprocessing plant. The staff's draft detailed statement on environmental considerations, which has been filed since the Licensing Board's referral to us, has taken into account the handling of radioactive wastes at the plant and the transportation of irradiated nuclear material and solid radioactive waste from the plant.

Section A of Appendix D, 10 CFR Part 50, which prescribes the scope of the subject matter of the environmental study to be conducted in implementation of paragraph 102(2)(C) of the National Environmental Policy Act, de-

fines that subject matter in the same language as paragraph 102(2)(C), 42 U.S.C. 4332(2)(C):

> "(i) the environmental impact of the proposed action,
> (ii) any adverse environmental effects which cannot be avoided should the proposal be implemented,
> (iii) alternatives to the proposed action,
> (iv) the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and
> (v) any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented."

The applicant has included in its environmental study the transportation of irradiated fuel from the reactor to a fuel reprocessing plant, as well as the transportation of packaged radioactive material from the reactor to burial grounds for low level wastes. It has done so pursuant to a memorandum of September 1, 1971, distributed by the Director of Regulation by means of a circular letter of September 3, 1971. The memorandum of September 1 was not a regulation adopted and published in accordance with Section 4 of the Administrative Procedure Act, 5 U.S.C. 553. It was a guide (see 36 Fed. Reg. 22851, n. 1, (1971) which did not establish a definitive regulatory requirement, but merely represented a solution considered acceptable as complying with requirements otherwise imposed.[3]

We conclude that the exclusion of the reprocessing function and its resulting wastes from the environmental study

[3] If a statement of policy is intended to have binding effect, it is a "rule" (Sec. 2(c). Administrative Procedure Act, 5 U.S.C. 551(4)) which becomes effective when adopted pursuant to the procedures of Section 4, *National Labor Relations Board* v. *Wyman-Gordon Co.*, 394 U.S. 759, 763–765 (1969); *Texaco, Inc.* v. *Federal Power Commission*, 412 F.2d 740 (3d Cir. 1969); *National Motor Freight Traffic Association* v. *United States*, 268 F. Supp. 90 (D.C. 1967), aff'd 393 U.S. 18 (1968); *Seaboard World Airlines, Inc.* v. *Gronouski*, 230 F. Supp. 44 (D.C. 1944); *Devcon Corp.*, 70 F.T.C. 1780, 20 Ad. L. 2d 292 (1966).

required by paragraph 102(2)(C) and by Appendix D of Part 50 is consistent with the purposes of the Environmental Policy Act and Appendix D and is proper.

Congress has directed in the Environmental Policy Act that an agency follow certain procedures in its decision making, and take into account the specified environmental factors; but it has not prescribed that any particular result shall follow when those factors have been taken into account.[4]

Whether the Environmental Policy Act and Appendix D of Part 50 should be so construed that the environmental study to be accomplished in this individual reactor licensing proceeding is to be extended to the reprocessing of fuel elements in a reprocessing plant and the disposition of waste resulting from that process requires examination of the relation of this reactor to the reprocessing function against the background of the nature, size and structure of the nuclear industry. We may take official notice of these general circumstances as descriptive of the nuclear industry at large.[5]

There are well over 100 commercial central station nuclear plants which are operable, under construction, or on order; more than 20 of these are already operating under license, about 40 have been granted construction permits and are in the course of operating license proceedings, about 15 more have been granted construction permits, and ap-

[4] *Calvert Cliffs' Coordinating Committee* v. *Atomic Energy Commission*, 449 F.2d 1109, 1112, 1115 (D.C. Cir. 1971); *Committee for Nuclear Responsibility* v. *Seaborg*, 463 F.2d 783 (1971), 3 E.R.C. 1126 (D.C. Cir. Oct. 5, 1971); *Upper Pecos Association* v. *Stans*, 452 F.2d 1233 (10th Cir. 1971).

[5] 10 C.F.R. Sec. 2.743(i); *Attorney General's Manual on the Administrative Procedure Act*, 79–80; *Davis, Administrative Law Treatise*, Vol. 2 and 1970 Supp., Secs. 15.03–15.06.

proximately another 40 are in construction permit proceedings. *Nuclear Industry 1971,* U.S. Atomic Energy Commission, 81. In addition to chemical reprocessing facilities operated by the Commission, three commercial reprocessing plants are in operation or under construction, and at least one other may be built in the near future. *Id.*, 133-136.

The record indicates that none of the nuclear fuel in the Vermont Yankee reactor will be replaced or reprocessed until 18 months after the commencement of operation, when about 4 percent of the fuel assemblies will be replaced. It is expected that about 40 percent of the fuel assemblies will be replaced 12 months later, and that 25 to 30 percent will be replaced each 12 months thereafter. As assemblies are removed from the reactor they will be stored in a storage pool at the site for 3 or 4 months at least, until they are shipped to a reprocessing plant. The spent fuel will be transported, under contracts to be let by Vermont Yankee, in heavily shielded casks by truck or rail, under applicable regulations of the Atomic Energy Commission (see e.g., 10 CFR Parts 70, 71, 73) and of the Department of Transportation (49 CFR Parts 172, 173).

Aside from the spent fuel, the wastes which will be generated at the plant will consist largely of slightly contaminated water treatment resins and such miscellaneous slightly contaminated items as rags, floor sweepings, worn-out equipment and paper. A small portion of the resins, amounting to about 65 cubic feet per year, will be slightly higher in activity and will be transported in appropriately designed and shielded casks, probably by tractor-trailer.

We recognize that there will be an incremental environmental effect ultimately resulting from the operation of this reactor as the result of the operation of whatever reprocessing plants and disposal grounds may from time to time be used during the life of the plant. There is no way

of ascertaining now which of the various reprocessing plants now in existence or to be constructed will from time to time receive some irradiated fuel elements from this plant for reprocessing during its estimated 40-year life. Reprocessing plants do not all use the same method of chemical separation of fissionable materials from the wastes, and there is no reason to believe that during the useful life of the Vermont Yankee plant other methods will not be developed for that purpose.

Each reprocessing plant which has been and will be constructed is a "production facility" within the meaning of Paragraph 50.2(a)(3) of the Commission's regulations (10 CFR Part 50). In the interest of the protection of the public health and safety and the national security, each has been or will be subjected to full review under 10 CFR Part 50 and other pertinent regulations through the procedures established in 10 CFR Part 2 for such a facility. Each plant not yet licensed will be subjected to full environmental review as a part of the Commission's licensing action under Paragraph 102(2)(C) of the Environmental Policy Act (10 CFR Part 50, App. D, par. A.1) — the procedure which NRDC now seeks, in effect, to invoke in this licensing proceeding for those same facilities *en masse*. The procedures are already in course for two reprocessing plants which are under construction or awaiting operation.[8]

The scope of the inquiry required by Paragraph 102(2)(C) is repeatedly defined, by the language of that section and as reflected in the language of Appendix D, as the impact, the consequences and the alternatives of "the proposed action", which in the present case is the licensing of a specific nuclear power reactor. The language of Section 102 directs that the environmental statement shall be

[8] *Matter of General Electric Company* (Docket No. 50-268); *Matter of Allied Gulf Nuclear Systems, Inc.* (Docket No. 50-332).

accomplished "to the fullest extent possible". But "the proposed action" is the licensing of the Vermont Yankee reactor and not of other present and future facilities at other places, to be operated by other firms, and having at best a contingent and presently indefinable relation to this facility. Paragraphs A.3, A.4, and A.8 of Appendix D repeatedly refer to the environmental impact of "the facility" as defining the scope of the analysis. Paragraph A.10 refers to "the proposed licensing action", meaning the licensing of the particular facility which is before the Licensing Board and before us in a specific proceeding.

It is evident to us that evaluation of the environmental effects of the operation of one or more unidentifiable reprocessing plants, employing separation processes which are unidentified and which may or may not now be known or used, during the course of the forty-year life of the plant, is not possible at this time and in this proceeding. If the fuel elements of the Vermont Yankee plant pass through the process stream of one reprocessing plant or another now operating or to operate in the future, preceded and followed by the fuel elements and their constituents from other plants, we cannot see how any effect of that process on the environment, taking into account the factors enumerated in Subsection 101(b) and Section 102 of the Environmental Policy Act, 42 U.S.C. Subsection 4331(b), 4332, can be analyzed except as a part of the integrated analysis of the total operation of that specific reprocessing plant. This analysis will be conducted for each reprocessing plant to be built in connection with the licensing of that plant as a "facility". Any reprocessing plant now in existence, if not already required to be subject to environmental review (see 10 CFR Part 50, App. D, Section B, Section C, and paragraphs A.1, A.8, and A.14) will be subject to review before any modification is permitted which, in the language

of Paragraph 102(2)(C), is one "significantly affecting the quality of the human environment."

No one has indicated, and we are unable to perceive, any significant respect in which the Vermont Yankee plant will have any different relation from any other nuclear power station to the reprocessing part of the fuel cycle. The logical consequence of the position of NRDC is that in every reactor licensing proceeding it would be required by Paragraph 102(2)(C) that there be an environmental analysis of the operation of every reprocessing plant, present and future, to which its nuclear fuel might be sent for reprocessing. We cannot believe that this was the intent of Congress in directing that there be an environmental analysis in each case of "the proposed action".

In specifying the scope of the environmental analysis prescribed by Paragraph 102(2)(C) as applicable to nuclear facilities, Appendix D has reflected the guidance of the Council on Environmental Quality,[7] which has been designated by Congress in Subsection 102(B) and Title II of the Environmental Policy Act, 42 U.S.C. 4342, as the consultant to insure appropriate consideration of environmental amenities and values.

The conclusion we reach is consistent with the "Guidelines of the Council on Environmental Quality for Statements on Proposed Federal Actions Affecting the Environment" (36 Fed. Reg. 7724, 1971). Although the "actions" subject to the Guidelines "are not limited to" those enumerated explicitly in Paragraph 5, it is evident on reading the Guidelines as a whole that each environmental impact statement should be about a specific "project . . . involving a Federal . . . license" (e.g. par. 5(a)(ii), 5(b)) or a specific

[7] See 35 Fed. Reg. 18469, December 4, 1970; 36 Fed. Reg. 18071, September 9, 1971.

"action" (par. 6(a)(i)(iii)(iv)). The Guidelines do not contemplate that the comprehensive environmental review of every "project" or "action" is required to include other "projects" or "actions". They thus speak of the effect of the proposed change upon "the area in question". (Par. 6(a)(ii); *cf.* pars. 9, 10). The "project . . . involving a Federal . . . license" (par. 5(a)(ii)) which we have before us is the operation of the Vermont Yankee reactor.

We are not concerned here with a situation in which a single "project" or "action" by the agency is being fragmented (*Named Individual Members of San Antonio Conservation Society* v. *Texas Highway Department*, 446 F.2d 1013 (5th Cir. 1971)), but one in which we are simply called upon to ascertain the scope of the environmental review to be conducted in this proceeding by defining the "action" in which the agency is engaged.

The staff's voluminous draft detailed impact statement on the environmental considerations relating to the proposed issuance of the Vermont Yankee operating license, which has been filed under the Guidelines of the Council on Environmental Quality and the Commission's Appendix D, will be referred for comment to other Federal agencies and State and local officials. The draft detailed statement includes, among other things, consideration of the radioactive wastes to be produced, the waste treatment and waste handling systems, and the transportation of and disposition of solid radioactive wastes. It also considers the ultimate decommissioning and decontamination of the plant. The inclusion of these subjects in the staff's draft statement, with such further evidence as may be admitted and the Licensing Board's findings and conclusions under Appendix D, will dispose of so much of the motion of NRDC as relates to them.

It should not be assumed that the environmental effects of the handling and disposition of wastes are being neglected. The Commission has issued a guide for the submission of information for the evaluation of the environmental effects of facilities (37 Fed. Reg. 10013, 1972), and the development of these detailed criteria is continuing. Under Section 202 of the Atomic Energy Act, 42 U.S.C. 2252, the Commission is required to keep the Joint Committee on Atomic Energy "fully and completely informed with respect to all of the Commission's activities", and the Joint Committee is required to conduct and has conducted continuing studies of the activities of the Commission. The transportation and disposition of high level wastes have repeatedly been the subject of testimony before the Joint Committee, and have at times been the subject of extended hearings.[8]

The adoption of NRDC's position could as a practical matter call a halt to the licensing of individual reactors. No power reactor could be licensed until every present and future reprocessing plant was studied in some depth — a process that would in turn, we presume, be asserted to involve every present and future power reactor in order to determine just what wastes would pass through each reprocessing plant. The operation of a reprocessing plant and the disposition of its wastes can and should be evaluated in the licensing proceeding for each reprocessing plant. "Each action" and "each project" and its environmental effects will thus be considered in depth in the appropriate proceeding which will best disclose the elements to be

[8] See *e.g.*, Hearings, Industrial Radioactive Waste Disposal, January 28–30, 1959, February 2–3, 1959, July 29, 1959; Hearings Environmental Effects of Producing Electric Power, October 28–31, 1969, November 4–7, 1969, January 27–30, 1970, February 24–26, 1970; see also Selected Materials on Environmental Effects of Producing Electric Power, Joint Committee on Atomic Energy, 91st Cong., 1st Sess., August 1969.

weighed. Each such proceeding will provide "a useful point at which public pressure can be placed". F. S. Cohen, *Field Theory and Judicial Logic,* 59 Yale L.J. 238, 251-2 (1959). For a particular nuclear reactor, analysis will thus be in its own individual proceeding, such as this one; for a particular reprocessing plant, analysis will be conducted in its own licensing proceeding with consideration of all the circumstances on the basis of which its particular environmental effects can be intelligently considered: its location, surroundings, design, processing method, capacity, and similar individual characteristics. Only in this way can the purposes of the Environmental Policy Act be sensibly and effectively served.[9]

Our careful study of the opinion of the Court of Appeals for the District of Columbia Circuit in *Calvert Cliffs' Coordinating Committee, Inc.* v. *Atomic Energy Commission,* 449 F.2d 1109 (1971), does not lead us to any different conclusion. Notwithstanding strong language in that case on

[9] The Administrative Conference of the United States has recommended reasonable limitation of alternatives to be considered in licensing procedures (Recommendation No. 15. Consideration of Alternatives in Licensing Procedures, 1969 Annual Report, Administrative Conference of the United States (1970), 45:

"Court decisions, notably *Scenic Hudson Preservation Conference* v. *FPC,* [354 F.2d 608 (2d Cir. 1965), *cert. denied,* 384 U.S. 941 (1966)] have emphasized that in licensing cases the Federal Power Commission must explore and give proper consideration to possible alternatives to the specific plan proposed by the applicant. This principle may in the future be applied to other licensing agencies. Since the range of possible alternatives in any case can be extensive and in some cases virtually unbounded, ways must be sought to control the scope and duration of licensing proceedings within manageable limits while meeting the requirements of the law.

"RECOMMENDATION

"Each agency which issues licenses . . . should seek to create procedures fitting its particular circumstances which will assure appropriate consideration of alternatives where necessary, and at the same time will permit effective administration of that agency's licensing functions."

the issues there presented, the Court's observations are addressed to the environmental study of "the proposal" or "the proposed action", in the language of the Environmental Policy Act, and to "a particular project" (449 F.2d at 1114, 1123).

In *Natural Resources Defense Council, Inc.* v. *Morton,* 458 F.2d 827, 3 E.R.C. 1558 at 1563, 1564 (January 13, 1972), the same Court has more recently pointed out that the required discussion of environmental effects need not be exhaustive, but is required only to extend to reasonable lengths:

"The statute must be construed in the light of reason if it is not to demand what is, fairly speaking, not meaningfully possible . . .".

* * *

"So long as the officials and agencies have taken the 'hard look' at environmental consequences mandated by Congress, the court does not seek to impose unreasonable extremes or to interject itself within the area of discretion of the executive as to the choice of the action to be taken."[10]

That the Court was unanimous in the views we have quoted is evidenced in the separate opinion of Judge MacKinnon (458 F.2d 827 at 839, 3 E.R.C. at 1565-1570).

Our conclusion is reinforced by *Scientists' Institute for Public Information, Inc.* v. *Atomic Energy Commission,* Order of Court (D.C. March 24, 1972), in which the Court rejected the claim that, in connection with the construction of a proposed experimental fast breeder reactor, the environmental review must extend beyond the specific reactor to the environmental effects of such reactors at large.

NRDC has asserted that it has no forum other than this proceeding in which the broad environmental studies it

[10] Citing the *Calvert Cliffs'* case.

seeks may be pursued. That is not the case. Each reprocessing plant has been and will be subject to the licensing procedures and standards established by the Commission's regulations, and in each such present and future proceeding a comprehensive analysis is being or will be made of its environmental effect. The Commission has procedures for rulemaking (10 CFR Part 2, Subpart H), under which the intervenors may by petition initiate rulemaking for the establishment of such regulations as they may choose to put forward. If in the judgment of the Commission it should be appropriate to resolve any specific questions which affect the industry as a whole, within the broad policy concerns which NRDC presents, then the rulemaking procedure is available.

Bearing in mind the purposes of the Environmental Protection Act, the Licensing Board will consider the extent to which the low level wastes, and the 65 cubic feet per year of resins which have a somewhat higher level of activity, will have an effect "significantly affecting the quality of the human environment" (National Environmental Policy Act of 1969, Sec. 102(2)(C), 42 U.S.C. 4332). In the exercise of the Licensing Board's discretion as to the extent to which evidence will be admitted or interrogatories allowed with reference to such subjects, it would be especially appropriate to limit inquiry to a level of detail appropriate to the character of the potential hazard associated with these wastes, so long as the Board has in its judgment an adequate basis for the required findings and conclusions (10 CFR Subsection 2.743(c)).

Evaluation of the environmental aspects of the ultimate depository of the high level wastes resulting from reprocessing is at this time speculative, because it has not yet been determined what the nature or the location of the ultimate depository will be. That project will also of course be subject to independent analysis and procedures in compliance with the Environmental Protection Act, and it cannot be the subject of appropriate evaluation in this proceeding.

The transportation of low level wastes to burial grounds was included within the scope of environmental review specified in the memorandum of the Director of Regulation dated September 1, 1971, and issued on September 3, 1971. Although that document does not have the effect of a binding regulation, we adopt it to that extent for the purposes of this proceeding. Since the operation of such burial grounds is licensed under other provisions of the Commission's regulations (10 CFR Part 30), the environmental aspects of each facility of that character may be considered in other proceedings.

The motion of NRDC included the request that the environmental study extend to the ultimate decommissioning and decontamination of the facility at the end of its useful life of about 40 years. The decommissioning and decontamination of power reactors have already been conducted within the framework of our licensing procedures, furnishing a practical basis for analysis.[11] The applicant has not opposed the inclusion of decommissioning and decontamination in the environmental study, the staff has considered it in its draft impact statement, and it may be considered in the Licensing Board's Findings and conclusions.

During the course of the hearing the Licensing Board raised the question that compliance with the objectives of the Environmental Policy Act does not explicitly fall within

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[11] *Matter of General Electric Company,* Docket No. 50–18; *Matter of Puerto Rico Water Resources Authority,* Docket No. 115–4; *Matter of City of Piqua, Ohio,* Docket No. 115–2.

the issues committed to the Licensing Board by the notice of hearing issued in this proceeding. This notice of hearing was superseded on March 1, 1972, with respect to environmental considerations by a supplemental notice of hearing which accomplished that purpose (37 Fed. Reg. 4733, (1972)).

Paragraph A(11) of Appendix D describes the functions to be performed by the Licensing Board with regard to the environmental statement and directs that its initial decision include findings and conclusions which may affirm or modify the contents of the final detailed statement prepared by the staff. The Licensing Board's findings and conclusions should of course be based upon all of the evidence before it (Administrative Procedure Act, Subsection 7(c), 5 U.S.C. 556(d)), and the evidence on which they will be based will very largely be in the record already. The extent to which further evidence may be required or appropriate is for the Board to determine in its discretion. The Board should allow such additional evidence as in its judgment is requisite to satisfy the purposes of the Environmental Policy Act and to support the findings and conclusions required by Appendix D, permitting only such additional evidence to be admitted as is in its judgment relevant, material, and reliable and not unduly repetitious (10 CFR Subsection 2.743(c)). The weight to be given to various environmental considerations is of course for the Board to consider.

It is therefore ORDERED:

1. So much of the motion of NRDC as requests that the substantive questions involved in the referral by the Atomic Safety and Licensing Board dated December 29, 1971, be referred to the Commission is denied;

2. Evidence as to the environmental effects of the transportation of irradiated nuclear fuel from the Vermont Yankee nuclear power plant to a reprocessing plant or other destination shall be admitted;

3. Evidence as to the environmental effects of the reprocessing of irradiated nuclear fuel, and the disposal of wastes resulting from reprocessing, shall not be admitted;

4. Evidence as to the environmental effects of the transportation of low level wastes, and of high level solid wastes other than irradiated fuel, from the reactor to depositories shall be admitted;

5. Evidence as to the environmental effects of the disposal of low and high level solid wastes shall not be admitted;

6. Evidence as to the environmental effects of decommissioning and decontamination of the facility at the end of its useful life shall be admitted;

7. The scope of the final environmental statement to be prepared by the staff, and of the findings and conclusions of the Licensing Board pursuant to 10 CFR 50, Appendix D, shall be consistent with the foregoing.

BY THE ATOMIC SAFETY AND LICENSING APPEAL BOARD,

WILLIAM L. WOODARD, *Executive Secretary.*

ALAB-179

UNITED STATES OF AMERICA
ATOMIC ENERGY COMMISSION

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Michael C. Farrar, Chairman
Dr. John H. Buck, Member
Dr. Lawrence R. Quarles, Member

In the Matter of

VERMONT YANKEE NUCLEAR POWER CORPORATION **Docket No. 50-271**

(Vermont Yankee Nuclear Power Station)

Mr. Anthony Z. Roisman and **Ms. Karin P. Sheldon**, Washington, D.C., for the intervenor New England Coalition on Nuclear Pollution.

Messrs. Richard Ayres and **David Schoenbrod**, New York, N. Y., for the intervenor Natural Resources Defense Council, Inc.

Mr. Thomas G. Dignan, Jr., Boston, Mass. (with whom **Messrs. Allen O. Eaton** and **John A. Ritsher**, Boston, Mass., were on the brief) for the applicant Vermont Yankee Nuclear Power Corporation.

Mr. Donald W. Stever, Jr., Assistant Attorney General, Concord, New Hampshire, for the State of New Hampshire.

Mr. Gregor I. McGregor, Assistant Attorney General, Boston, Mass., for the Commonwealth of Massachusetts.

Messrs. Kimberly B. Cheney, Attorney General, and **John R. Ponsetto**, Assistant Attorney General, Montpelier, Vermont, filed papers for the State of Vermont.

Mr. William Massar (with whom **Mr. Mark R. Haflich** was on the brief) for the AEC Regulatory Staff.

DECISION

February 28, 1974

We have before us for review the initial decision of the Licensing Board authorizing the issuance of a full-term, full-power operating license for the applicant's Vermont Yankee Nuclear Power Station, a boiling water reactor facility located on the Connecticut River near Vernon, Vermont.[1] Exceptions to that decision were filed by the New England Coalition on Nuclear Pollution (NECNP) and the Natural Resources Defense Council (NRDC), two intervenors in the proceeding.[2]

After hearing oral argument on the exceptions and on certain matters which we raised *sua sponte*,[3] we determined that prompt action on our part was necessary with respect to two safety-related matters. For that reason, we issued an opinion dealing only with those two subjects. ALAB-124, RAI-73-5 358 (May 23, 1973). By that decision, we remanded the proceeding to the Licensing Board for further consideration of (1) NECNP's motion to reopen the record (2) and the adequacy of the applicant's quality assurance program.

Because our action created a real possibility that the hearing record would be reopened on a number of subjects and that the initial decision would be altered, we deferred review of the initial decision and the remaining exceptions pending the outcome of the remand (*id.* at 359). We need

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[1] LBP-73-8, RAI-73-2 130. The applicant had previously been granted a temporary operating license for the facility, under the then-existing authority conferred by § 192 of the Atomic Energy Act, 42 U.S.C. 2242.

[2] The other principal parties — the applicant, the AEC regulatory staff and three New England States — filed no exceptions.

[3] See ALAB-120, RAI-73-4 268 (April 26, 1973).

not recount here the events which transpired after the initial remand. Those events are reflected in the numerous opinions which we have issued in the interim.[4] For present purposes, it is sufficient to state that the hearing was reopened for consideration of the fuel densification issue, the plant was derated pending the outcome of that reopened hearing, and only recently was the fuel densification problem finally resolved, allowing once again for normal operations.

The matters which were the subject of remand now having been resolved, we complete our review of the initial decision in this opinion. By way of introduction, we can point out that NRDC's twenty-seven exceptions focus primarily upon the adequacy of the cost-benefit analysis mandated by the National Environmental Policy Act, while NECNP's sixteen exceptions cover a variety of topics.[5] Some of the principal issues raised have been largely disposed of by decisions we rendered either at earlier stages of this proceed-

[4] After the initial remand, we issued the following published opinions: ALAB-126, RAI-73-6 393 (June 7, 1973); ALAB-131, RAI-73-6 427 (June 25, 1973); ALAB-138, RAI-73-7 520 (July 25, 1973); ALAB-141, RAI-73-8 576 (August 22, 1973); ALAB-167, RAI-73-12 1151 (December 20, 1973).

[5] While we wish to commend all parties on the quality of the briefs filed, we were particularly impressed with the manner in which NECNP presented its exceptions and supporting brief. Although governed by the former version of the rules (see 10 CFR (1973 ed.) 2.762), those filings achieved in full measure the goals of clarity and precision which the present version of the rules is designed to accomplish (10 CFR 2.762, as amended March 2, 1973, 38 *F.R.* 5624). The exceptions avoided the unnecessary multiplicity which has been a problem in certain recent cases. Moreover, it materially aided our consideration of the exceptions and our understanding of the parties' positions to have the exceptions related to a common topic grouped for briefing, with the text of the exceptions repeated at the beginning of the relevant portion of the brief (*cf. Long Island Lighting Co.* (Shoreham Station), ALAB-156, RAI-73-10 831, 832 (October 26, 1973). The assistance provided by all of the briefs was especially important in light of the complete absence of record references in the initial decision.

ing[6] or in other cases. Accordingly, we give those issues summary treatment in the initial portion of this opinion, and cover the other issues in more depth in the remaining portions.

I

ISSUES COVERED BY PRIOR DECISIONS

The issues which have been largely resolved by our prior decisions include the adequacy of the emergency core cooling system (ECCS) interim acceptance criteria (IAC); the adequacy of the treatment in this proceeding of "Class 9" accidents; the environmental impact of the fuel cycle; and the environmental impact of the uses to which the electricity produced in this facility will be put.

A. *ECCS.* NECNP asserts that it should not have been precluded from presenting evidence on the question as to whether the ECCS interim acceptance criteria, "if met,"[7] would "provide sufficient protection for the public health and safety." This issue had its genesis in NECNP's attempt to challenge the validity of the criteria on the dual grounds that their adoption was procedurally defective and that they were substantively unsupported. In response to a set of questions certified to us during the course of the hearing below, we held that the procedural objections were not well founded and that, in view of the pendency of a rulemaking proceeding at which the merits of the criteria were

[6] Prior to the issuance of the Initial Decision on the full-power, full-term operating license, this Board issued a number of decisions in response either to questions certified by the Licensing Board or to decisions on less than full power or less than full term operating licenses.

[7] The question as to whether the facility met the criteria was explored at the hearing, and NECNP eventually conceded (see App. Bd. Tr. 40) that the criteria were met (absent the subsequently revealed effect of the fuel densification phenomenon).

under consideration,[8] it would be inappropriate to consider the substantive objections in an individual licensing proceeding. ALAB-57, WASH-1218 435 (June 20, 1972); see also *Consolidated Edison Co.* (Indian Point 2), ALAB-46, WASH-1218 293 (March 10, 1972).

We see no reason to reexamine these holdings. Specifically, we find unavailing NECNP's assertion that ALAB-57 ignored the then-existing "Calvert Cliffs" principle. That principle permitted limited attacks upon the substantive validity of Commission regulations in individual licensing proceedings and established a method for presenting such an attack.[9] In announcing the "Calvert Cliffs" principle, however, the Commission did not have before it a situation in which there was pending — as there is here — a rulemaking proceeding concerned with the precise regulation under attack. And nothing in that decision indicates that the principle there established should be invoked if rulemaking were pending. The reasons expressed in ALAB-57 are sufficient to explain why it was appropriate not to invoke the "Calvert Cliffs" rule in this instance.

While we are thus rejecting NECNP's ECCS exceptions (numbers 1 and 2) on their merits, the applicant insists that those exceptions are procedurally defective as well, in that they involve matters not raised or preserved below. The applicant asserts that a comparison of the exceptions with the wording of one of NECNP's proposed conclusions of law

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[8] That rulemaking proceeding was recently concluded by the Commission's issuance of a lengthy decision announcing the adoption of acceptance criteria for emergency core cooling systems. CLI-73-39, RAI-73-12 1085 (December 28, 1973).

[9] The "Calvert Cliffs" principle was first articulated in the Commission's memorandum decision of August 8, 1969 in *Baltimore Gas and Electric Co.* (Calvert Cliffs Units 1 and 2), — AEC —. That principle has since been substantially modified by 10 C.F.R. 2.758.

demonstrates that the exception has a different thrust than the matters raised before the Licensing Board.

We agree with the applicant that NECNP never properly presented a claim that this facility was somehow different from other plants and for that reason the application of the IAC to it would not adequately protect the public health and safety. NECNP's claims were only that the criteria themselves were generally invalid (see NECNP Motion of March 6, 1972, and Statement of March 7, 1972). By the same token, however, we cannot accept the applicant's further insistence that NECNP has waived *all* ECCS contentions. As just indicated, NECNP quite clearly attempted to challenge the validity of the IAC. This Board unequivocally rejected its challenge at an interlocutory stage of the proceeding. Once that occurred, NECNP was under no obligation to file proposed findings of fact and conclusions of law on the subject of its challenge to the criteria — no further steps had to be taken to preserve its exception to the ruling rejecting its challenge to the validity of the criteria. *Cf. Consumers Power Co.* (Midland Units 1 and 2), ALAB-123, RAI-73-5 331, 333-34 (May 18, 1973).

B. *"Class 9" Accidents.* NECNP's exceptions 6, 7 and 8 are all based on its contentions below that, for reasons related to asserted ECCS ineffectiveness, the assumptions underlying the analysis of the environmental impact of a "Class 9" accident were improper). We recently had occasion to discuss a similar "Class 9" accident argument in some detail. *Long Island Lighting Co.* (Shoreham Station), ALAB-156, RAI-73-10 831 (October 26, 1973). There, after fully defining the term "Class 9" (*id.* at 834-835), we explained that the guidelines for treatment of such accidents in individual licensing proceedings did not, in general, "close the door to consideration of Class 9 accidents" (*id.* at 835). Rather, we explained, the parties would be permitted to

demonstrate the appropriateness of assumptions other than that utilized by the staff in the first instance, *i.e.*, that the particular accident under consideration had such a low probability that the environment risk is insignificant (*ibid.*).

Again, however, this general rule cannot be relied upon to legitimize an attempt to demonstrate a likelihood that the ECCS will not work. For, once it has been established that the facility complies with the applicable ECCS criteria, entertaining such an attempt would be the equivalent of entertaining a challenge to the ECCS criteria themselves. As we have already indicated, all such challenges were required to be deferred for consideration in the rulemaking proceeding. ALAB-57, *supra,* p. 161-162; see also ALAB-156, *supra,* RAI-73-10 at 847.

C. *Fuel Cycle.* By virtue of a ruling of this Board, both NECNP and NRDC were precluded from adducing evidence concerning the environmental impact of the fuel cycle. ALAB-56, WASH-1218 395 (June 6, 1972).[10] We decline the invitation, presented by their exceptions, to reexamine the validity of the reasons assigned in ALAB-56 in support of our refusal to permit inquiry into the effect of most aspects of the fuel cycle. For, regardless of the correctness of those reasons, we would, for another reason, have to reach the same result if faced anew with the question.

Specifically, shortly after the issuance of ALAB-56, the Commission initiated a rulemaking proceeding to consider the extent of the environmental impact of the fuel cycle and to ascertain how to weigh that impact in an individual licensing proceeding. See the November 15, 1972 Notice of Proposed Rulemaking on the Environmental Effects of the

[10] See also *Consumers Power Co.* (Midland Units 1 and 2), ALAB-60, WASH-1218 (Suppl. 1) 459 (July 19, 1972).

Uranium Fuel Cycle (37 *F.R.* 24191). Whatever doubt there may have been concerning the correctness of the result reached in ALAB-56 has been eliminated by the convening of that rulemaking proceeding. Once that proceeding was initiated, it would have been singularly inappropriate to undertake to duplicate it in an individual reactor licensing proceeding. See ALAB-57, *supra,* WASH-1218 at 443-44.[11] Thus, even in the absence of the Commission's express directive that we adhere to ALAB-56 pending the outcome of the fuel cycle rulemaking (37 *F.R.* at 24193), we undoubtedly would have done so. For this reason, and for the reasons expressed in the two *Shoreham* opinions (ALAB-99, RAI-73-2 53 and ALAB-156, *supra,* RAI-73-10 at 833), the fuel cycle exceptions (NECNP number 3 and NRDC numbers 6(i), 20, 24 and 25) are denied.[12]

D. *Consequences of the Use of Electricity.* In *Shoreham,* we also held that the consequences of the use of electricity produced at a nuclear facility should not be considered in an individual licensing proceeding. The reasons for that holding were articulated in some detail and are dispositive of NECNP's exception 4 filed here. ALAB-156, *supra,* RAI-73-10 at 852-54. See also *Nucleus of Chicago Homeowners v. Lynn,* — F. Supp. — , 6 E.R.C. 1094 (N.D. Ill., Nov. 21, 1973).

[11] The rulemaking proceeding is also a far more appropriate forum for the consideration of the environmental impact of the fuel cycle than is a proceeding concerned with the licensing of a particular reprocessing plant or waste disposal facility (*Cf.* ALAB-56, WASH-1218 at 404-06).

[12] NRDC's exception 27 touches on an aspect of the fuel cycle — i.e., transportation of spent fuel from the reactor to a reprocessing facility — concerning which inquiry may be made in an individual licensing proceeding. See ALAB-99, *supra,* RAI-73-2 at 54. Nothing in the unparticularized argument in support of that exception (Brief, p. 33), however, points to any "alternatives to 'normal' transportation procedures" which could "reduce the environmental risks" (*ibid.*). The exception is denied.

II

LOW-LEVEL RADIOACTIVE EMISSIONS

A. Two of NECNP's exceptions (numbers 9 and 10) concern the question of whether plant operations can be expected to comply with the requirement, embodied in 10 CFR 20.1(c), that "every reasonable effort" be made to maintain radioactive releases "as far below the limits specified in [Part 20] as practicable."[13] NECNP's claim that the staff and the applicant did not perform analyses adequate to demonstrate that releases would be kept "as low as practicable" focuses on two time periods: (1) an interim period prior to the scheduled installation of an improved off-gas system, and (2) the period thereafter, extending over the remaining life of the license.

With respect to short-term operation, NECNP argues that the Licensing Board misinterpreted the applicable regulation when it concluded that a "reasonable effort" consisted of promising to investigate the higher-than-expected releases which had occurred during operations under the temporary operating license while continuing to operate the plant. Turning to long-term operation, NECNP argues that the studies necessary to determine whether, on balance, the optimum system for control of radioactive releases had been chosen have never been performed. Accordingly, it urges, the record provides no basis for a determination as to whether the "as low as practicable" criterion has been met.

[13] A supplementary requirement, covering only facilities for which applications were filed after January 1, 1971, utilizes the terminology "as low as practicable." 10 CFR 50.34a(a). Both that term and the term used in 10 CFR 20.1(c) are defined as meaning "as low as is practicably achievable taking into account the state of technology, and the economics of improvements in relation to benefits to the public health and safety and in relation to the utilization of atomic energy in the public interest." For convenience, and since both forms of expression have the same meaning, we use the shorter form — "as low as practicable" — in this opinion.

B. The Commission first formally adopted the "as low as practicable" requirement on December 3, 1970 (35 *F.R.* 18385). It later initiated a rulemaking proceeding to consider whether to adopt numerical standards, embodied in a proposed Appendix I to 10 CFR Part 50, which might define precisely a level of radioactive releases would be deemed to be "as low as practicable" in all cases (37 *F.R.* 11113, June 9, 1971).

In contrast to the course followed in connection with the ECCS rulemaking, the Commission did not require that there be adherence to any numerical guidelines during the pendency of the "as low as practicable" rulemaking proceeding, which is now in its final stages.[14] Thus, in the interim, it has been permissible to contend in an individual licensing proceeding not only that a proposed radwaste system will not perform as well as is claimed, but also that the level of releases which the system is claimed to achieve is not "as low as practicable" considering "the state of technology and the economics of improvement in relation to benefits . . ." (see fn. 13, *supra*). In other words, in the absence of interim numerical guidelines and until such time as Appendix I may be adopted, a contention that a proposed level of releases is not "as low as practicable" does not constitute an impermissible challenge to the regulations (compare our ECCS rulings, discussed at pp. 161-162, *supra*); instead, such a contention raises questions only of interpretation and application of the governing regulations.[15]

[14] On January 8, 1974, the rulemaking hearing board informed the Commission that the record was complete except for the filing of the participants' final statements of position. The last of those statements is due in early March, 1974.

[15] Of course, any claim that releases must be kept below "practicable" levels — *e.g.*, a claim that an available radwaste system improvement must be utilized without regard to cost or degree of additional radwaste control achieved — would constitute an impermissible challenge to the existing regulations, at least in the absence of the showing required by 10 CFR 2.758.

During this interim period, although precise numerical standards are not available, significant assistance in interpreting the "as low as practicable" standard is furnished by 10 CFR 50.36a(b). One purpose of that provision is to permit a degree of flexibility with respect to levels of releases under unusual operating conditions, but the provision also reflects the Commission's view that average annual releases "at small percentages" of Part 20 limits are achievable under normal operating conditions. While this language does not embody a precise standard and does not serve to preclude consideration in an individual licensing proceeding of a contention which focuses on the qualitative factors now reflected in the definition of "as low as practicable," it nonetheless provides an important guideline to be utilized in evaluating the merits of such a contention. More specifically, we believe it embodies a Commission view that a radwaste system which can be shown to achieve "small percentages" of Part 20 limits is *prima facie* in compliance with the regulations. And, as is customary, the presentation of a *prima facie* case shifts the burden of going forward to the adversary, *i.e.*, to those asserting that the proposed system is inadequate.[16]

Our conclusion, just stated, concerning the effect to be attributed to the "small percentages" language stems from an application of the fundamental principle of statutory construction which requires that, if at all possible, a statute be interpreted in a manner which gives effect to all its provisions. *Weinberger* v. *Hynson, Westcott & Dunning,* 412 U.S. 609, 633 (1973). Under that principle, the "small percentages" language cannot be entirely ignored. Yet, by the same token, it cannot be equated with a fixed numerical standard which would effectively supersede the qualitative standards set forth in 10 CFR 20.1(c) and 50.34a(a).

[16] See and compare *Midland,* ALAB-123, *supra,* RAI-73-5 at 345.

In sum, in order to give effect to all portions of the applicable regulations, we must regard a showing by the applicant and staff that the proposed system will achieve "small percentages" of Part 20 limits as constituting *prima facie* support for the proposition that the "as low as practicable" criterion has been satisfied. Under this view, while the ultimate burden of persuasion on the issue remains with the applicant, the burden of going forward with evidence is shifted to the opposing party. In other words, the applicant can rest on a showing that "small percentages" will be achieved; to succeed, an intervenor must then adduce its own evidence — which, of course, can include cross-examination of the other parties' witnesses — to show that even lower emissions are "practicable."[17]

C. Against this background, we can agree with NECNP that the question of compliance with the "as low as practicable" standard, pending installation of the advanced offgas system, deserved closer analysis than it received in the Initial Decision. Moreover, in light of the applicant's own statements on the last day of the hearing (Tr. 6127-52), we are perplexed by the rejection of NECNP's proposed subsidiary finding 9(a), regarding the leaking fuel rods, as "not supported by evidence in the record" (Initial Decision, p. 46, RAI-73-2 at 143).[18]

We are not now required, however, to resolve the question of short-term compliance. We have been advised that the

[17] We stress again that adoption of numerical guidelines defining what is to be regarded as "as low as practicable" — such as is contemplated by proposed Appendix I — would alter this situation.

[18] In ALAB-138, *supra,* we held that NECNP had not timely sought to reopen the hearing on the hydriding question, and that that question was not of such overriding safety importance as to excuse the untimeliness. RAI-73-7 at 526. That holding on the question of reopening was not conclusive as to NECNP's exception to the Board's resolution of the question of interim compliance, for the exception would turn on an evaluation of the evidence put in the record before the hearing closed.

advanced off-gas system has been installed. The issue is, therefore, moot.[19]

D. Turning to the question of compliance with the "as low as practicable" criterion in the long term, we note that the Board's opinion does not specifically address that contested issue. The evidence did, however, reveal that liquid releases were to be kept to 1% or less of Part 20 limits (Technical Specifications, as amended, 3.8.B.2, 3.8.F.1.b; Tr. 1865-66) and that, after the installation of the advanced off-gas system, gaseous effluents would be kept to 2% or less of those limits (Tr. 4432, 4438-39).

In our view, these values are within the range of the "small percentages" of Part 20 limits contemplated by 10 CFR 50.36a(b).[20] The applicant having thus presented a *prima facie* case, the burden then shifted to NECNP to show that even lower levels were "practicable," all factors considered. NECNP began an inquiry apparently directed to that end, and succeeded in eliciting evidence to the effect that the applicant had not examined the feasibility of certain alternatives mentioned by NECNP's counsel (Tr. 1866-99, 1938, 1950-51). While this perhaps launched NECNP's inquiry in the proper direction, those concessions do not, standing alone, suffice to rebut the applicant's *prima facie* case. In our view, to succeed NECNP had to show not only that the applicant had not investigated certain hypothetical alternatives, but also that those alternatives were indeed "practi-

[19] The applicant installed the advanced system during an outage which occurred while we were concerned with those issues which, because of their significant safety implications, we had singled out for rapid disposition. See fn. 4, *supra*. In this regard, we should note that NECNP did not submit to us a request for a stay of the Initial Decision pending our consideration of the propriety of operations during the period prior to installation of the advanced system.

[20] In view of the mootness of the issue of interim compliance, we need not decide whether the expected short-term off-gas releases of 10% of Part 20 limits were within the "small percentages" range.

cable" ones. There is no such showing in the record, and accordingly there is no basis for a holding that the applicant's proposed system, which limits releases to small percentages of Part 20 limits, can be improved upon in a "practicable" manner.

III

COOLING TOWER OPERATION

A. The flow of condenser cooling water for this facility can be regulated so that cooling is accomplished by one of three possible methods — once-through, or open cycle, cooling, in which the total flow is discharged directly to the river; closed cycle, in which the total flow passes through the cooling towers and is recirculated; and helper cycle, in which the amount of flow through the cooling towers and the amount of water recirculated can be varied. The applicant proposed to utilize the closed system at certain times, varying its operation according to the prevailing conditions. Without downgrading the need to prevent thermal pollution of the river, the intervenors pointed out that cooling tower operation itself could be environmentally degrading through creation of excessive fog or noise.

The Board found that little, if any, environmental insult would result from the operation of the towers. With respect to the noise problem, it found that "the surveys made of the noise levels indicate that they are acceptable." Initial Decision, p. 15, RAI-73-2 at 134. The Board then determined that, at least for an extended period, all operations must be under the closed cycle mode. Its reasons for doing so were as follows (Initial Decision, pp. 27-28, RAI-73-2 at 138):

> . . . the Board concludes that there are insufficient data respecting the existing ecosystem of the Connecticut River adjacent to the nuclear plant site to permit thermal or chemical releases into the river at this time, beyond the

minimal releases resultant from closed cycle operation, that more data from a more comprehensive effort than heretofore undertaken, should be developed so that the feed stock of the river can be determined, the effects of thermal and chemical releases can be analyzed, the species and number of fish affected can be approximated, seasonal effects determined, and other relevant matters developed. The Board determines that, as a suitable alternative that will not cause significantly adverse environmental impacts, Applicant should operate with closed cycle operations at all times until these data are developed and determinations made respecting significant adverse impacts on the environment by the advisory group for non-radiological environmental monitoring, which group is established in section 2.2.2 of the Technical Specifications. The Order of the Board for closed cycle operations herein will so provide, in order to protect the ecosystem before possible injurious effects have occurred and in order to reduce fish kill and damage to zooplankton and phytoplankton. . . .

Based on this statement, the Board imposed the following as Condition A to the license (Initial Decision, p. 53, RAI-73-2 at 146):

> Applicant shall operate the nuclear power facility with closed cycle operations at all times until data are developed and determinations made respecting significant adverse impacts on the environment by the advisory group for non-radiological environmental monitoring, which group is established by section 2.2.2 of the Technical Specifications dated September 9, 1972 as further modified by Staff change dated December 27, 1972.

The applicant did not take exception to the imposition of this condition and, under our rules, thus waived any objection. 10 CFR (1973 ed.) 2.762(a). NECNP, however, filed an exception to the Board's resolution of the noise issue, asserting that "it was error to conclude that the operation of the cooling towers at Vermont Yankee would create noise levels that would always be acceptable" (Exception No. 13). We viewed this exception as presenting at least an indirect

challenge to the Board's holding that, owing to environmental considerations other than noise, all operations must be in the closed cycle mode. At the same time, we were unsure of the precise meaning of Condition A. In terms, it required closed cycle operations until "data . . . respecting significant adverse impacts on the environment" were obtained. But, we thought, complete data of that nature could not be obtained without conducting at least some once-through operation and measuring its effects. And such operation appeared to be precluded by Condition A.

For these reasons, we raised *sua sponte* and directed the parties to discuss at oral argument the following question (ALAB-120, *supra,* RAI-73-4 at 268):

> Whether the Board's requirement . . . that the plant operate with cooling towers at all times until relevant data are collected:
>
> (a) will prevent the collection of data related to the effects of once-through operation; and
>
> (b) embodies the most appropriate alternative, from an environmental standpoint, for dissipating the waste heat generated by plant operation.

The first part of that question was, of course, suggested by the procedural dilemma we thought had been created by the wording of Condition A; the second part had been suggested primarily by the probability that, if NECNP's "noise" exception were well taken, the noise problem might outweigh the other environmental considerations relied upon by the Licensing Board.

B. We have concluded that no modification of the Board's resolution of the noise issue is warranted. We have also concluded that it is appropriate to clarify Condition A to reflect unambiguously what we, and all the parties, believe to be its intent. In light of these conclusions, and in the

absence of any exception directed to the substance of Condition A, no further examination of the matter of cooling tower operation is warranted.

1. We agree with the applicant that, contrary to the view expressed in NECNP's exception, the Board did not hold that noise levels "would always be acceptable." Rather, the Board held only that the information then available indicated that the noise levels were generally acceptable, but that continuing monitoring would be conducted and that, based on the results of that monitoring, modifications might later be deemed necessary. The Board's decision in this respect is a perfectly reasonable one in light of the evidence,[21] and we have found no basis for disturbing it. In this connection, we wish only to reemphasize that the staff should give careful consideration to the results of the monitoring, so that, if necessary, steps may be taken to reduce the impact of tower noise upon nearby residents and upon the educational process at the nearby school.

2. At the oral argument, each of the parties agreed that the principal concern which led the Board to impose Condition A was the absence of adequate base-line environmental data, and that the Board's intention was that once the base-line data were obtained, consideration could be given to conducting open-cycle or helper-cycle operations. In other words, the terminology employed in Condition A was intended to result first in the acquisition of adequate base-line environmental data; then the analysis of that data by the advisory group and a prediction of whether closed-cycle operation will result in "significant adverse impact on the

[21] See the affidavit of John T. Collins (ff. Tr. 5268) and the supplementary testimony of J. E. Kruck (ff. Tr. 5297). Although in some respects the sound levels in the school building with the windows open slightly exceeded recommended levels, in Mr. Collins' opinion this would not interfere with normal classroom discussion (Affidavit, par. 8.e. and 8.g.).

environment"; followed by, if justified, the grant to the applicant of temporary authorization to depart from closed cycle operations for testing purposes and, finally, permanent authorization to conduct other than closed cycle operations under particular conditions.

On that basis, the substance of Condition A is acceptable. Consequently, as each of the parties which addressed the issue agreed was appropriate,[22] we need only amend the language of that condition to reflect more accurately its substance (see p. 186, *infra*).

3. Our resolution of any doubts concerning the noise issue and our clarification of the meaning of Condition A removes the concerns that motivated us to raise the question of the appropriateness, from an environmental standpoint, of closed cycle operation. In other words, since we agree with the Board's discussion of the noise problem and share its view that additional base-line environmental data must be gathered, there is no basis for disturbing the requirement that only closed cycle operations would be permitted until the necessary base-line data were obtained.

IV

NRDC'S CLAIMS CONCERNING THE ADEQUACY OF THE ENVIRONMENTAL IMPACT STATEMENT

A. The basic claim made by NRDC, both in the proceedings before the Licensing Board and in the exceptions filed with us, is that the environmental impact statement, and in particular its cost-benefit analysis, does not comply with "the standards set forth by NEPA and the Commission" (Brief in Support of Exceptions, p. 1). The individual ex-

[22] See App. Board Tr., pp. 57-62, 70, 75, 189.

ceptions relating to this claim arose out of the following circumstances.

1. The final environmental statement (FES) prepared by the staff and issued in July 1972,[23] was introduced into evidence at the outset of the last, and largely environmental, session of the hearing. On the last day of that session, the staff presented for cross-examination Dr. Paul C. Fine, who had participated in the preparation of the FES (Tr. 6158-59). The parties cross-examined Dr. Fine extensively; in particular, NRDC — which had had no representative present on the earlier days of the final session — conducted lengthy cross-examination (Tr. 6223-99, 6309-11).

Perhaps the principal cost-benefit contention which NRDC advanced before the Licensing Board was that the FES did not sufficiently quantify or specify in monetary terms the costs and benefits associated with facility operation. NRDC's most serious concern in this respect was the failure to place a dollar value upon the benefit received by the public from the electricity to be produced by the facility.

The Board's decision on the question of the adequacy of the cost-benefit analysis was to "accept the several costs and benefits assessed by the Staff" with certain modifications (Initial Decision at 29, RAI-73-2 at 138). The principal modification stemmed from the Board's finding that, while the staff had for the most part "quantified all items in dollars to the extent possible . . . ," it had improperly failed to do so with respect to the electricity to be produced (Initial Decision at 31, RAI-73-2 at 139). In that connection, the Board held that the monetary value of the benefit of the

[23] The applicant had submitted an environmental report in August, 1970. That report was supplemented in December, 1971. The staff's draft environmental statement was issued for comment in April, 1972. The FES contains copies of the comments submitted in response to the draft statement, as well as the staff's response to those comments.

electricity could be determined by multiplying anticipated energy production in kilowatt hours by the average retail rate of 2.18 cents per KWH (Initial Decision at 32-34, RAI-73-2 at 139-40).[24]

2. NRDC's exceptions assert that, in a number of respects, the environmental impact statement, and particularly its cost-benefit analysis, is inadequate even as modified by the Board.[25] Many of the asserted defects are said to have been present in the staff's cost-benefit analysis and not corrected, or not susceptible to correction, by the Licensing Board. In spite of its insistence that the Board place a monetary value on the benefit accruing from the electricity produced, one group of NRDC's exceptions (numbers 13, 14, 15 and 22) objects to the Board's actions in that regard as being beyond the scope of the Board's authority, lacking in evidentiary support, and arbitrary in other respects.

The question as to whether, and if so how, the value of electricity should be calculated for consideration in an environmental impact statement is a significant and recurring one. As indicated above, NRDC urged that computation of a monetary value was required, but has excepted to the Board's performance of that task. We have reviewed the Board's treatment of the issue on a plenary basis, that is, not only in light of NRDC's specific complaints but also in the exercise of our broad authority to review from all stand-

[24] The Licensing Board did not undertake to perform that calculation itself, although under its view the result of the calculation would be a significant factor in the cost-benefit analysis.

[25] Commission regulations treat initial decisions by licensing boards, and appellate decisions issued by us or by the Commission, as *pro tanto* modifications of the FES. To the extent that they deal with environmental matters, such decisions stand as modified versions of the environmental impact statement required by NEPA and are transmitted to the Council on Environmental Quality; in addition, notification of their issuance is placed in the *Federal Register*. 10 CFR Part 50, Appendix D, Section A.11.

points the correctness of all aspects of an initial decision (see ALAB-124, *supra*, RAI-73-5 at 361).

B. We have concluded that the placing of a monetary value on the benefit of electricity is not mandated either by NEPA or by Commission regulations, and that attempting such a task serves no useful purpose. If anything, the appearance of precision resulting from such an exercise tends to divert scrutiny from the difficult judgmental decisions involved in performing an accurate cost-benefit analysis and, specifically, in determining whether a genuine need for the facility exists. Accordingly, we are vacating the modification concerning the dollar value of electricity made by the Board to the cost-benefit analysis.

1. We agree in full measure with NRDC's major premise that environmental impact statements should quantify costs and benefits to the fullest extent practicable, and do so in monetary terms. While the principal focus of judicial decisions has been on the quantification of environmental costs, we have no doubt that equal attention should be paid to the quantification of the benefits sought to be achieved by a proposed project.

The question remains, however, of the extent to which a meaningful dollar value can be placed on the benefits accruing from the licensing of electric generating facilities. Quantification is, of course, practicable in describing the amount and reliability of the electricity to be produced. Assigning a dollar value to represent the resulting benefit is, however, a different matter. It may be that, for some types of projects subject to NEPA, some of the benefits can be described meaningfully in monetary terms. But the benefits achieved from the generation of electricity cannot be so described.

To be sure, the formula adopted by the Licensing Board is attractive for its simplicity. Calculating the product of two factors — KWH × average retail rate — yields an apparently precise dollar value for the "benefits" of the project in terms of electricity produced. The attractiveness of this method is, however, only superficial. Closer analysis reveals its shortcomings.

In the first place, the record provides no basis — and we are aware of none — for an assumption that the value of having electricity available is no more than the retail price which a consumer of that electricity presently pays for it. The value to society derived from being able to meet a real demand for electricity is not measurable in dollars. If the electricity to be produced by a proposed project is genuinely needed — a point which we focus on later in this opinion and which deserves close scrutiny in hearings — then the societal benefits achieved by having that electricity available are immeasurable.

In other words, given the structure of our exising society, the alternative of not meeting real demand is unthinkable. Life as we know it — indeed, the present population itself — could not be supported without electricity. In that context, and to the extent that demand is inelastic, the value of electricity cannot be measured by the amount of the bill received by the consumer — it is, in a real sense, "priceless".

In short, the dollar value which the Licensing Board would place on the benefits of electricity is, in our judgment, not an accurate, or meaningful, one.[26] Nor is it particularly

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[26] Although, in its papers before us, the applicant appears to support the Licensing Board's approach (Brief in Opposition to Exceptions, pp. 50-53), its position before us may have been influenced by the fact that it was in the applicant's interest to defend the result reached by the Licensing Board. We find more convincing the applicant's insistence at oral argument before the Licensing Board that there exists no meaningful method

useful in attempting to construct a cost-benefit analysis. For example, the Licensing Board indicated that the average retail rate, which it utilized in calculating what it said were the "benefits", also reflected — by virtue of the nature of the rate-making process — the costs involved in producing those benefits (Initial Decision at 33-34, RAI-73-2 at 140). But NRDC, carrying this analysis to its logical — but admittedly absurd — conclusion, points out that under this approach the "benefits" of the proposed project are equivalent to the economic costs and thus economic and environmental costs together necessarily outweigh the "benefits" (Brief in Support of Exceptions, pp. 21-22). This points up the lack of meaning and utility in the Licensing Board's computation of a dollar value for benefits of electricity.

The same deficiencies can be seen from a slightly different viewpoint. The Board did note that some small portion of the retail rate — "perhaps .002 cents" — reflects profit or return on investment (Initial Decision at 34, RAI-73-2 at 140). Under this approach, "benefits" evaluated in terms of the retail rate would exceed the economic costs. But the amount of the excess of benefits over cost, supposedly a measure of the net "benefit" of the project, would in reality represent nothing other than the profitability of the utility's operation. As such, then, it is not a true measure of net "benefit", for surely there is little, if any, correlation between the profitability of the project to investors and the benefit of the project to society. Similarly, if a state elected to establish non-profit entities to produce electricity for its residents, it would not follow from the equivalency of re-

for placing a monetary value on the electricity to be produced (Oral Argument, Tr. 223-24). In that connection, we disagree with the inference drawn by the Board "that [the] Applicant contemplated that the value of electricity could be expressed . . ." in the manner the Board selected (Initial Decision at 32, RAI-73-2 at 139).

ceipts and costs that no net "benefit" accrued from the production of electricity.

2. No party has pointed to a suitable method for placing a dollar value on the benefits of electricity, and, in line with our discussion above, we believe none exists.[27] In the absence of such a method, the NEPA cost-benefit balancing must proceed along different lines.

In this connection, NRDC relies upon judicial decisions which, it asserts, establish a requirement that a cost-benefit analysis measure not just the costs and benefits of alternatives to the project, but the costs and benefits of the project itself.[28] But none of those decisions contained a full discussion of the application of that general principle concerning

[27] Throughout the Board's opinion and NRDC's brief, heavy reliance is placed, for the proposition, *inter alia*, that a monetary value must be placed upon electricity, upon the May 1972 "Guide for Submission of Information on Costs and Benefits of Environmentally Related Alternative Designs for Defined Classes of Completed and Partially Completed Nuclear Facilities". We note also that Regulatory Guide 4.2, entitled "Preparation of Environmental Reports for Nuclear Power Plants", issued in March 1973, states that the benefits of the electricity to be generated "should also be expressed in dollars by showing expected average annual revenues [with the] basis of assigning dollar values . . . clearly stated". § 8.1, p. 4.2-33.

In order to avoid any confusion on this score, we should observe that guides such as those referred to represent the thinking only of the regulatory staff, not the Commission itself. Indeed, an express disclaimer to that effect appears in Regulatory Guide 4.2, and the May 1972 Guide contains a statement (p. i) that it is "supplementary to the draft" which eventually led to the issuance of Regulatory Guide 4.2. In short, the documents are useful as guides; but they are not regulations and, insofar as the adjudicatory process is concerned, they represent only the opinions of one of the parties to that process and as such cannot be viewed as necessarily controlling. For its part, then, the Licensing Board attributed more significance to the statements in the Guide than was warranted. For our part, the portion of § 8.1 of Regulatory Guide 4.2 quoted above does not alter our conclusion concerning the inutility of attempting to assign a dollar value to the benefits of electricity.

[28] See *NRDC* v. *Morton*, 458 F.2d 827 (D.C. Cir. 1972); *Calvert Cliffs' Coordinating Committee* v. *AEC*, 449 F.2d 1109 (D.C. Cir. 1971); *EDF* v. *Corps of Engineers*, 470 F.2d 289 (8th Cir. 1972).

the implementation of NEPA to the licensing of electric generating facilities. It is appropriate, then, for us to set forth our own view as to the steps which should be followed in conducting a NEPA review of a proposed nuclear-powered electric generating facility.

At the outset, inquiry must be made into whether there exists a genuine need for the electricity to be produced. This inquiry involves not only an analysis of existing generating capacity and of projections of expected growth, but also consideration of the possibility that measures to curtail consumption will be initiated. In this regard, appropriate attention must be given to energy conservation considerations, insofar as they affect the likelihood that predicted demand will in fact ocur.[29] At the same time, however, cognizance can be taken of the effect which a shortage of fossil fuel, or a need to divert that fuel to other uses, might have upon demand for non-fossil fueled generating sources.

On the basis of this information, a preliminary decision can be made as to the extent to which some form of generating facility appears to be justified. Even a decision favorable to the applicant on this score does not, of course, mean that a proposed nuclear facility designed to meet the predicted demand will pass muster. The Commission must still examine the proposal in light of all of NEPA's purposes. At that stage, however, the focus shifts to the relative costs and benefits of alternatives to the proposed facility. Consideration of alternatives to the proposed project must be wide-ranging, embracing, *inter alia,* alternative

[29] The Commission has, in two recent decisions, emphasized that full consideration must be given to appropriately framed energy conservation contentions. *Niagara Mohawk Power Corp.* (Nine Mile Point Unit 2), RAI-73-11 995; and *Consumers Power Co.* (Midland Units 1 and 2), RAI-74-1 19.

generating methods, alternative sites,[30] and alternative auxiliary equipment (*e.g.,* cooling towers). Consideration of these subjects requires a comparison of the relative benefits achieved and costs incurred under each of the alternative proposals, so that the optimum alternative may be selected.

Finally, an overall balancing of costs and benefits occurs, but it is not necessary for this purpose to attempt to place a dollar value on the benefits of the electricity to be produced. Instead, on a qualitative basis, the costs associated with the optimum alternative selected must be balanced against the benefit achieved by meeting the degree of demand anticipated. To be sure, if the facility will satisfy a real demand for electricity that cannot be met by the purchase of power from other systems, then the result of the balancing may be a foregone conclusion in that, as indicated above, the alternative of not meeting the demand is unthinkable.

For the reasons stated, we are compelled to vacate that portion of the initial decision requiring the assignment of a dollar value to the benefits of electricity. Having done that, NRDC's exceptions to the precise manner in which the dollar value was to be assigned (see p. 172, *supra*) are no longer of consequence. Moreover, NRDC's broad objection to the effect that no overall balancing was undertaken (exception 2) must be rejected, since what NRDC views as a "pretense at balancing" (Brief, p. 10) comports with our broad outline of the steps to be followed in fulfilling the purposes of NEPA.

[30] See, *e.g.,* the October 5, 1973 letter from the Director of Regulation to the applicant in Docket Nos. 50-354 and 50-355, *Public Service Electric & Gas* (Newbold Island), stating that "an important requirement in the preparation of an environmental impact statement for a nuclear power plant is, of course, a consideration of alternative sites" and concluding that an alternative location was "a more desirable alternative from an environmental standpoint."

C. The preceding discussion of those of NRDC's exceptions relating to the monetary value of the benefits of electricity touched, in the broadest terms, on the general content of environmental impact statements. In this section, we consider NRDC's remaining exceptions, which assert that there were a number of defects in the environmental impact statement for this particular facility.

1. NRDC's claim that the cost-benefit analysis was "unsystematic and lacked rigor" (exception 1; Brief, p. 7) rests on two narrow assertions: (1) while costs and benefits should have been kept separate, there were "two examples where alleged benefits appeared in the cost section", and (2) "the text of the cost section on the proposed action is randomly interspersed with some but not all of the costs and benefits of some of the alternatives" (Brief, p. 7).

We agree in principle with NRDC's contention that a systematic approach must be brought to bear on the complex questions and decisions involved in conducting and describing a cost-benefit analysis related to a proposed nuclear facility. But examination of the portions of the record referred to by NRDC reveals that the deficiencies allegedly present here are of a minor nature. They stem, not from inadequacies in conducting the cost-benefit analysis, but rather only from the selection of an inartful method of describing some of the relatively insignificant results of that analysis. Contrary to NRDC's claim that their effect has been the "shielding [of] the decision-making process behind a smoke-screen of confusion" (Brief, p. 9), these deficiencies do not prevent the reader of the FES either from gaining a clear understanding of what is involved or from framing a challenge to the facts contained or conclusions expressed therein. Thus, while this exception has some validity in principle, no substantive modifications of the envrionmental statements are called for.

2. By another group of exceptions (numbers 3, 4, 5, 6(ii)-6(v), and 21), NRDC argues that the magnitude of the costs of the project were not disclosed by the environmental impact statement. Specifically, claims NRDC, certain costs were either omitted entirely, not identified with particularity, or not monetarily quantified to a sufficient degree.

NRDC's principal argument in this respect concerned the cost of the fuel cycle, which we have already discussed in connection with NECNP's exceptions *(supra,* pp. 163-164). It also placed heavy emphasis, however, on the allegedly inadequate consideration given to the several types of emissions from the plant, and suggested that a dollar value could readily have been assigned to the adverse environmental impacts of those emissions by considering their effect upon real estate values.

Unlike the claim that the benefits from electricity produced can be represented by a dollar value, NRDC's suggestion concerning consideration of changes in real estate values as a measure of costs holds out some promise. If plant emissions do have an effect on real estate values, measuring that effect would provide a useful, meaningful method for evaluating some of the costs associated with facility operation. But the only evidence in the record on this point was provided by a staff witness whose statements, on cross-examination, appear to indicate that he did not know how the effect, if any, of emissions on real estate values could be measured in the circumstances presented here (Tr. 6174, 6200, 6281, 6286-87). In the face of that testimony, it was incumbent upon NRDC to adduce evidence of its own to demonstrate that its suggestion was, indeed, a workable one. In the absence of such a demonstration, we must proceed on the basis of the uncontradicted testimony rejecting real estate evaluation as a useful tool in this case. The exceptions are denied.

3. A third group of exceptions (numbers 7, 8, 9, 10, 16, 17 and 18) reflects NRDC's view that confusion existed with respect to the "issues concerning secondary benefits" (Brief, p. 16). The short answer to these exceptions is that, as a staff witness pointed out, the secondary benefits listed in the FES (*e.g.*, local taxes and local employment) were mentioned only for informational purposes and did not play a part in the decision to proceed with the proposed project (FES, p. XI-14, par. B.8; Tr. 6175, 6198-99, 6290-91). Because many of the "secondary benefits" consist of transfer payments resulting in offsetting costs and benefits, we agree with the staff and NRDC that they have no place in the overall evaluation of the appropriateness of the project.[31]

4. As we discussed in connection with the reasons why the assignment of a monetary value to the benefits of the electricity to be produced is unnecessary, an environmental impact statement must contain a thorough analysis of alternatives. NRDC asserts that the cost-benefit analysis for this project reflects an inadequate treatment of alternatives (exception 23; Brief, p. 22). Its sole argument in support of this assertion runs along the following lines: (1) the alternative most fully considered in the FES was closed cycle cooling; (2) the Board found this alternative to be inadequately treated, and (3) "it follows" that the staff's less thorough discussion of other alternatives is also below the requisite standards.

The difficulty with this argument is that the Board rejected the staff's conclusion with respect to the closed cycle cooling alternative not because the staff's discussion was inadequate, but because the Board disagreed, *on the merits,*

[31] The Licensing Board modified the FES by "classifying local taxes as a benefit, rather than as a cost which the Staff considered [them to be]" (Initial Decision at 38, RAI-73-2 at 141). Our reading of the FES and the relevant testimony does not, however, reveal that the staff treated local taxes as a cost. In any event, in light of our discussion in the text, above, this "modification" embodies no error warranting corrective action.

with the staff's conclusions. Stated otherwise, the Board believed, based on its evaluation of the facts, that a different alternative than the one selected by the staff should be adopted. From this, it does not "follow" that the conclusions reached by the staff with respect to possible alternatives in other areas should also be rejected, even if the discussion of those alternatives was abbreviated. The question is whether, on the merits, different conclusions with respect to those alternatives should be drawn. Except with respect to the early installation of the off-gas system (discussed in Part II of this opinion, *supra*), NRDC has pointed to no specific deficiencies in the discussion of alternatives, and no evidence indicating that an improper evaluation of alternatives was made. No further inquiry into the question of alternatives is warranted.[32]

5. The final point deserving discussion is NRDC's claim that the staff offered no expert testimony on cost-benefit analysis. This claim is based on NRDC's view that the staff witness, Dr. Paul Fine, was not an expert (Exception 12; Brief, pp. 19-20).

This argument suffers from a number of procedural and substantive defects. In the first place, no objection to Dr.

[32] In addition to its general exception on the question of alternatives, NRDC did file an exception (number 26) directed to the assertedly inadequate discussion of alternative means of decommissioning the facility. But any additional discussion of alternative methods of decommissioning would have been an idle exercise. Decommissioning will not take place for some forty years and, in our judgment, nothing would be less profitable than attempting to evaluate now what method of decommissioning will be deemed most desirable forty years from now, in light of the knowledge which will have been accumulated by that time. And, while NRDC in its Brief (p. 33) calls for an examination of "means of lessening the impact of decommissioning," we are not aware of any measures, and NRDC has pointed to none, that could have been taken in the latter stages of construction that would have lessened the impact of whatever form decommissioning eventually takes. NRDC presented nothing to indicate that the nature of the inquiry it is calling for would be other than entirely speculative and hypothetical. In that circumstance, there was no basis for undertaking such an inquiry.

Fine's qualifications to offer expert testimony was made either when he first appeared or after he concluded his testimony. Indeed, it was not until briefs were filed some forty days later that the question was first raised. Permitting such a late challenge to the qualifications of an expert would be seriously prejudicial to the rights of the party on whose behalf the expert appears and to the orderly conduct of hearings. In administrative hearings and judicial trials, if one "expert" put forth by a party is rejected as not qualified on the basis of a timely challenge, that party may wish to attempt to qualify a different witness to testify as an expert on its behalf. If a meritorious challenge to the qualifications of a witness is permitted to be withheld until after the taking of evidence is concluded, then one of two undesirable results would follow: either (1) the party sponsoring the witness would be deprived of its opportunity to present a different expert; or (2) the hearing or trial would have to be reopened to afford the sponsoring party that opportunity. Neither result would be tolerable. In the absence of a justification for the delay in bringing the challenge, NRDC's challenge must be rejected as untimely.[33] Specifically, to the extent that the claim of inexpertise goes to Dr. Fine's background, training and experience, that claim should have been raised on voir dire. And to the extent that the claim is founded on testimony given by Dr. Fine which, according to NRDC, documented his lack of expertise, that point should have been raised as the testimony unfolded or at the

[33] See McCormick on Evidence, § 70, pp. 149-50: ". . . when the witness is first called to the stand to testify, the opponent must then challenge his competency, if grounds of challenge are then known to him. If not then known, and the cause for disqualification is disclosed in the testimony the challenge may then be made." [footnotes omitted]

time it was concluded, rather than forty days after the hearing closed.[34]

In any event, we think NRDC has failed to establish a lack of expertise on Dr. Fine's part. To the contrary, NRDC itself draws heavily on the opinions expressed by Dr. Fine as support for many of the positions taken in the brief filed in support of its exceptions (see, *e.g.*, Brief, pp. 4-7, 9, 12, 15, 17). And examination of the portions of the transcript which NRDC relies upon as demonstrating Dr. Fine's "confusion" reveals, at most, that Dr. Fine held and expressed opinions at variance from those held by NRDC's counsel. This provides no basis for a determination by us that Dr. Fine lacked the requisite expertise. If it disagreed with his views, the burden was on NRDC to adduce evidence, through experts of its own or some other means,

[34] At oral argument before us, NRDC referred to the procedure utilized in connection with the admission of the FSAR into evidence as justifying the failure to challenge Dr. Fine's entitlement to expert status in a timely manner (Appeal Board Tr. 101-02), 216-17). Having examined the procedure referred to, we have concluded that the Licensing Board's sanctioning of it in no way furnished justification for the course followed by NRDC with respect to Dr. Fine's testimony.

When the FSAR was offered into evidence, some doubt arose as to whether its initial admission into evidence would be viewed as an expression of approval of its contents, and, concomitantly, whether a refusal to object to its admission would constitute waiver of the right to challenge the validity of its contents (see Tr. 585-610). Thus, the Board had to face the question as to whether (1) to admit the FSAR, subject to cross-examination of the sponsoring witnesses and, possibly, a subsequent motion to strike all or part of it, or (2) to withhold ruling on its actual admission pending inquiry into the validity of its contents. As was well within its discretion, the Board determined to follow the former procedure (Tr. 610). A similar procedure appears to have been followed with respect to the admission of the FES (see Tr. 5238-60). But this meant only that, after the FES was admitted, NRDC retained the right to attack its contents through the introduction of further evidence. By thus permitting challenges to the contents of documents to be deferred, the Board in no way relieved NRDC of the obligation to raise in a timely manner objections which it may have had to the qualifications of subsequent witnesses.

tending to show that Dr. Fine's expressed opinions were of such a nature that they called his expertise into question.[35]

V

MISCELLANEOUS ISSUES

A. *Energy Conservation Alternatives.* In its proposed conclusions of law, NECNP pointed to the failure of the Final Environmental Statement to consider, as an alternative to full power operation of this facility, the use of energy conservation measures. In particular, NECNP claimed, the FES did not discuss the elimination of promotional advertising and the redesign of the electric rate structure (Proposed Conclusion 1(b)). The Board rejected the proposed conclusion, without specific discussion (Initial Decision at 47, RAI-73-2 at 144). NECNP's exception 5 asserts that insufficient attention was given to energy conservation. As indicated by our earlier comments (p. 175, *supra),* the general principle advocated by NECNP is a sound one. As previously noted, the Commission has made it plain that energy conservation contentions have a legitimate place in licensing proceedings (see fn. 29, *supra).*[36]

At the time the National Environmental Policy Act was passed, however, this facility had been under construction for two years. At the time the FES was written, the facility was nearly ready for operation. Whatever impact the evaluation of energy conservation measures might have had at the time construction permits were under consideration will be considerably lessened, if not eliminated entirely, at

[35] In light of our denial of NRDC's other exceptions dealing with the environmental impact statement, we deny exception 11, which was not separately briefed and which only summarizes points NRDC made elsewhere.

[36] The Federal Power Commission had adopted a similar policy. See its "Guidelines for Preparation of Applicants' Environmental Reports," par. 8.2 (38 *F.R.* 15944, 15949, 15952, June 19, 1973).

the operating license stage. NECNP itself appears to recognize this, for its energy conservation argument seems to seek, not a ban on facility operations entirely, but only the imposition of limitations on operation during periods when such operation would allegedly be harmful from a radiological or environmental standpoint (Brief, pp. 8-9). As illustrative examples, it suggests *(ibid.)* that utilization of energy conservation measures might permit the imposition of (1) restrictions on operations at times when operational noise is affecting the educational process at a nearby school, or (2) a ban on operations pending the installation of the improved gaseous radwaste system (see Part II, *supra).*

Under the circumstances presented here, there was no occasion for a discussion in the FES of the particular suggestions NECNP now advances as a means of reducing demand. NECNP's comments on the draft environmental statement did not mention these ideas except by way of the very general criticism that "ways of reducing demand are not analyzed" (FES, A-144). Moreover, although not precluded from doing so, NECNP put in no evidence of its own to demonstrate that adoption of such measures would indeed allow more flexibility to impose restrictions on operations at appropriate times. Consequently, the Board would not be expected to impose such restrictions. Finally, the latter of the two suggestions made by NECNP has been mooted (see p. 167, *supra*), while the noise problem referred to in the former will be given full consideration in any event (see pp. 169-170, *supra*).

B. *Allegedly Unsupported Factual Findings.* Several of NECNP's exceptions (numbers 12, 14 and 15) reflect claims that certain factual findings made by the Licensing Board are unsupported by the record. From the manner of presentation of the argument in support of those exceptions (Brief, p. 23 and par. 1 and 3 on p. 24), we gather that those

exceptions relate to factual findings which are not viewed as crucial to the ultimate result reached in the case. We discuss those exceptions briefly.[37]

1. In discussing the environmental impact of the cooling towers, the Licensing Board mentioned its concern with "the inclusion of chemicals associated with river water, such as cadmium [and] mercury . . . , that may be carried off site" (Initial Decision at 16, RAI-73-2 at 134-35). This concern was alleviated, however, by the evidence that there was "no drift of water droplets off site and thus no transport of chemically laden particles" in tests made at 50% of full power (Initial Decision at 16, RAI-73-2 at 135).

In discussing its concern over possible effects from these chemicals, the Board found that "there is no evidence of significant concentrations of those chemicals in the river water" *(ibid.)*. Citing comments filed by the Environmental Protection Agency in response to the draft environmental statement, NECNP excepts to this finding.

EPA's letter did state that "there exist unusually high levels of cadmium and mercury in the Connecticut River" (FES, p. A-75).[38] Thus, NECNP's exception is well taken, at least to the extent that the EPA letter — which was admitted into evidence as part of the FES — establishes the literal incorrectness of the finding that there was "no" evidence of significant concentrations of the two metals. There

[37] NRDC's exception 19 deals with a statement the Board made with respect to its acceptance of the applicant's proposed findings. That exception is denied as lacking in either materiality or specificity, depending upon its purpose.

[38] EPA's concern was not with off-site drift as such. Rather, EPA feared that, as a result of evaporative losses occasioned by cooling tower operation, the concentration of these metals would increase, that is, that there would be even higher concentrations in the cooling tower blowdown than were present in the original river water. This, in turn, could lead to a higher accumulation of these metals in the tissue of fish and other aquatic biota. See FES, pp. A-75–A-76.

was, however, evidence adduced which countered EPA's unparticularized assertion and demonstrated, based on actual monitoring, that the levels of these metals in the Connecticut River are quite low. See FES, p. II-18; Ex. 1 to written Testimony of George Starbuck, following Tr. 5229. That evidence is far more persuasive than EPA's unsupported conclusory assertion.[39]

In any event, NECNP does not urge that we add any conditions to the license to insure that no injury results from the presence of these metals in the cooling tower blowdown. In light of the applicant's commitment to monitor and, if necessary, treat that blowdown, we find it unnecessary to take further action.

2. The temporary operating license issued on September 7, 1972, did not expire until February 28, 1973. Because the hearing was closed on November 9, 1972, NECNP takes exception to the Board's statement in its initial decision, issued virtually contemporaneously with the expiration of the temporary operating license, that there "has not been any injury" to the public in the course of "the operations undertaken pursuant to the temporary operating license" (Initial Decision at 4-5, RAI-73-2 at 131).

It is not clear to us that the Board's statement was intended to cover the period after the hearing closed. If it was, we would agree with NECNP that it was overbroad and unsupported by the record. In addition, it would have

[39] While the evidence referred to rebuts EPA's assertion, the discussion in the FES of EPA's comment was non-responsive. FES, pp. XII-1–XII-2. Thus, that portion of the FES does not discuss the Connecticut River but instead states only that "the concentrations of cadmium and mercury *in waters of rivers in the U.S.* are extremely low" [emphasis added]; even then, it goes on to concede that very low concentrations of mercury and cadmium in water "can produce toxic effects on aquatic organisms," and thus does little to alleviate the concerns expressed by EPA (see fn. 38, *supra*).

been gratuitous for, as NECNP points out (Brief, p. 23), "there was no attempt to explore this issue" in the hearing. For precisely these reasons, we have not given any weight to this statement of the Board in reaching our decision. Any error that might have been committed is, therefore, harmless.

3. NECNP asserts that there was no record basis for the Board's finding that "the present shutdown", which took place after the record was closed, "was undertaken out of an abundance of caution on an emergency basis to examine and determine the extent of the effect" from fuel rod hydriding (Initial Decision at 11, RAI-73-2 at 133). Again, NECNP's exception is technically well-taken. But the exception ignores that NECNP itself had urged at oral argument before the Licensing Board that the shutdown constituted the "first refueling outage" at which the applicant was committed to install the advanced off-gas system (Oral Argument Tr. 163). We view the Board's finding as nothing more than a response to that argument, premised on an analysis of the situation as counsel had represented it to exist. In any event, the point is now moot (see p. 167, *supra*).

C. *Continued Service of Documents.* The Licensing Board refused NECNP's request that it require the continuation, during the full term of the license, of the practice, followed during the hearing, of serving all applicant-staff correspondence relating to the facility upon the parties and the Brattleboro public document room. NECNP's challenge to that ruling (exception 16) is met by the applicant's argument (apparently endorsed by the staff) that no rule or regulation requires such service to be continued.

We believe that the questions of continued service upon the parties and continued maintenance of the document room are governed by different considerations. The parties' entitlement to personal service derives from their participation in an ongoing administrative proceeding. That right is different in nature from the right, if any, of the public generally to access to relevant documents in the vicinity of the plant.

With respect to service upon the parties, our decision is controlled by our view that a contested licensing proceeding cannot be said to be fully completed until judicial review has been concluded (or the time for seeking such review expires without review having been sought). Moreover, during the course of judicial review, the parties have the right to request the court to remand the case to the Commission for the consideration of new evidence. 28 U.S.C. 2347(c). Although such a request may well be less freely granted than a request to reopen a hearing prior to issuance of an initial decision (see ALAB-138, *supra,* RAI-73-7 at 523), the two rights are analogous insofar as their effective exercise, in circumstances where time is of the essence, requires ready and rapid access to new information. For these reasons, we hold that the practices with respect to service of documents upon parties followed during the course of the administrative proceedings must continue unabated during the period allowed for seeking judicial review; thereafter, during the pendency of judicial review, those practices must continue unabated with respect to those parties who participate in the judicial review proceedings.[40]

While the service of documents upon the parties must, therefore, be continued for a time, we have concluded that

[40] Nothing we say here, of course, is intended to preclude some or all of the parties from entering into voluntary arrangements to continue serving documents after judicial review has been concluded. And, the issue not having been presented here, we express no opinion as to whether a party is entitled, after judicial review has been concluded, to personal service of those documents which relate to a continuing reporting or monitoring requirement imposed in connection with the resolution of an issue as to which the party had played an active role in the hearing.

there need not be continued maintenance of a document room in the locality of the plant. No statutory or regulatory provision expressly requires the maintenance of such a room; indeed, since the Commission has by regulation provided for a general public document room in Washington, D. C. (10 CFR 2.790, 9.7),[41] it is fair to draw the negative inference that the Commission presently intends that no other document room need be maintained.

NECNP argues, however, that the existence of a local document room is necessary to preserve and make effective the public's right "to utilize the procedures for suspension or revocation of a license under 10 CFR Part 2, Subpart B" (Brief, p. 25). This argument has some force. Thus, although it is unstated in the regulations, the practice in recent times has been to afford the public a right to utilize those procedures by requesting the Commission or the Director of Regulation to initiate proceedings, by the issuance of a "show cause" order, to modify, suspend or revoke a license. 10 CFR 2.202.

We can also agree with NECNP's theory that statutes or regulations conferring substantive rights can be read as conferring also those procedural rights necessary to an exercise of the substantive right. See, *e.g.*, *Steele* v. *Louisville & Nashville RR Co.*, 323 U.S. 192, 204 (1944). Where we part company with NECNP is on the proposition that the existence of a local public document room is a procedural right necessary to the exercise of the right to call for the initiation of a "show cause" proceeding. There are alternative methods by which the public can obtain information. These methods include the use of the Washington, D. C. Public Document Room and the exercise of the rights conferred by the Freedom of Information Act. See 10 CFR

[41] Document rooms serving limited purposes are maintained at certain major operating field offices. 10 CFR 9.7, 1.3(b).

9.8. In the absence of the time constraints which exist during the course of the basic licensing proceeding, these alternative methods are adequate to permit effectuation of the right to call for a "show cause" proceeding.

In short, there is no "necessity," in the legal sense, for the continued maintenance of a local document room.[42] But there certainly is a substantial degree of administrative burden attached to maintaining such a room. In this connection, the requirement NECNP would have us impose would be applicable to all reactor facilities, since NECNP's argument does not rely upon any special circumstances associated with this facility. For these reasons, and because the Commission has provided by rule for the Washington, D. C. document room, we believe that the question as to whether local document rooms should be maintained during the life of a facility license is one that can be addressed only by the Commission in the exercise of its rulemaking authority and not by this Board in the exercise of its adjudicatory functions.

D. *An "Unresolved" Matter.* In a footnote to its opinion, the Licensing Board observed that during the proceeding below it had raised a question concerning the staff's recommendation that during operations the containment atmosphere be inerted by the use of nitrogen (Init. Dec. p. 12, fn. 3, RAI-73-2 at 133). As the Board related it, the applicant had objected to this recommendation but had not called for resolution of the dispute in the hearing. According to the Board, the staff had failed to furnish data which the Board

[42] In our opinion, no such necessity may be inferred from the fact that a local public document room is maintained during the course of a proceeding. Even if — and we do not intend to intimate a view on this question — such a room were deemed "necessary" to the effective exercise of certain rights at the hearing stage (*e.g.*, the right to petition for leave to intervene in the hearing), that would not be determinative as to whether it is necessary to the exercise of rights existing at a later stage.

had requested on this point. Having said that, the Board terminated its discussion by noting that the question remained "unresolved" *(ibid.)*.

We have been supplied with no record references which would have enabled us to ascertain the precise nature of the Board's expressed concern. We note, however, the concern of the Advisory Committee on Reactor Safeguards (ACRS) that a consequence of inerting may be to make more difficult "inspection and repair of the primary system".[43] As we understand it, inerting has the intended purpose of mitigating the potential consequences of a very unlikely accident. In achieving that purpose, it can have the adverse consequences of hampering thorough inspection and repair activities (thereby threatening to increase the possibility of the accident whose consequences are intended to be mitigated) and posing a health and safety threat to one segment of the public, *i.e.*, plant workers.[44]

The question raised by the Board should not have remained unresolved. As we noted in an earlier opinion, this operating licensing proceeding is governed by the former version of the Rules of Practice, whereby issues other than those raised by the parties may be considered by the adjudicatory tribunals (ALAB-124, *supra*, RAI-73-5 at 362, fn. 4). The issue raised by the Board is a significant one which has been the subject of discussion for some time.

In view of the lengthy period during which this proceeding has been before us, we are reluctant to defer any longer our complete resolution of all the issues presented. Yet the issue of the advisability of inerting is not susceptible of resolution on the existing record (which to our knowledge

[43] See p. 3 of the March 9, 1971 ACRS "Report on Vermont Yankee Nuclear Power Station."

[44] See, in the latter respect, *Iowa Electric Light and Power Co.* (Duane Arnold Energy Center), ALAB-134, RAI-73-7 483.

is silent on this issue) and we believe that to leave the issue unresolved would constitute an abdication of our responsibilities. For these reasons, we are directing that the following memoranda be submitted to us:

(A). If the applicant and staff have reached a mutually satisfactory resolution of this issue, a memorandum from the staff by Friday, March 8, 1974 (with replies, if any, from other parties by Wednesday, March 20, 1974), delineating (1) the substance of the solution; (2) the basis for the belief that the safety questions raised by the Licensing Board and the ACRS have been satisfactorily resolved; and (3) a suggested approach for submitting the matter to this Board for resolution on the record.

(B). If the applicant and staff have not reached a mutually satisfactory resolution of this issue, a memorandum from each of these parties by Friday, March 8, 1974 (with replies from them and any other interested parties by Wednesday, March 20, 1974) delineating (1) the substance of each party's position on the issue; (2) the basis for the belief by each that adoption of its position would constitute a satisfactory resolution of the safety questions presented; and (3) a suggested approach for resolving the issue on the record.

VI

CONCLUSION

For the reasons stated, the exceptions are *denied* except insofar as granted in part herein.[45] The parties shall continue to serve documents in accordance with the requirements set forth herein. Condition A to the license is to be rewritten to read as follows:

Applicant shall operate the facility only under the closed cycle mode of cooling until, in the opinion of the advisory group for non-radiological monitoring (estab-

[45] Even though certain exceptions have been granted in part, the effect of that action has not been to disturb the existing operating license authorization.

lished by Section 2.2.2 of the Technical Specifications, as amended), (1) sufficient data have been obtained to establish an environmental base-line so that changes produced by other modes of cooling can be properly evaluated, and (2) in light of such data, there is reasonable assurance that testing of other cooling methods will not itself result in significant adverse effects on the environment. Thereafter, with the approval of the AEC Regulatory Staff, operations utilizing other modes of cooling for testing purposes may be undertaken. Upon completion of the tests, the advisory group shall make recommendations to the staff concerning the permanent restrictions, if any, which should be placed upon operations under other than the closed cycle mode of cooling.

In accordance with our established practice, we have examined those portions of the initial decision to which no exceptions were taken. With the possible exception of the question of inerting, our examination does not disclose any error on the Board's part which would affect the validity of its conclusion that the authorization of the issuance of an operating license was merited by the evidence.

Accordingly, subject to the outcome of the presently-unresolved question of inerting, and except insofar as modified herein, the initial decision is *affirmed.*

It is so ORDERED.

FOR THE ATOMIC SAFETY AND
LICENSING APPEAL BOARD

MARGARET E. DUFLO
Secretary to the Appeal Panel

ATOMIC ENERGRY COMMISSION
[10 CFR Part 50]

ENVIRONMENTAL EFFECTS OF THE URANIUM FUEL CYCLE

Notice of Proposed Rule Making

Notice is hereby given that the Atomic Energy Commission is considering possible amendments to its regulations in 10 CFR Part 50, Appendix D, "Interim Statement of General Policy and Procedure: Implementation of the National Environmental Policy Act of 1969 (Public Law 91-190)," that would specifically deal with the question of consideration of environmental effects associated with the uranium fuel cycle in the individual cost-benefit analyses for light water cooled nuclear power reactors.

The Commission's regulation implementing the National Environmental Policy Act of 1969 (NEPA) in 10 CFR Part 50, Appendix D, requires that each draft and final detailed statement prepared pursuant to section 102(2) (C) of NEPA for a nuclear power reactor contain a cost-benefit analysis which, among other things, considers and balances the adverse environmental effects and environmental, economic, technical, and other benefits of the facility. This regulation further provides that the cost-benefit analysis will, to the fullest extent practicable, quantify the various factors considered.

In several nuclear power reactor licensing proceedings it has been argued that the cost-benefit analysis for the facility that is the subject of the licensing action should include costs and benefits associated with the uranium fuel cycle, such as environmental effects of reprocessing spent fuel and disposal of wastes resulting from reprocessing. Other

factors related to the fuel cycle include those associated with uranium mining and milling, uranium hexafluoride production, isotopic enrichment, fuel fabrication, and transportation associated with the above. It has been urged that in each power reactor case the contribution of the nuclear power reactor to the environmental costs associated with the fuel cycle activity should be ascertained and considered in the cost-benefit balance.

The Commission's Atomic Safety and Licensing Appeal Board has held that environmental impact statements for nuclear power reactors should consider, among other things, environmental effects of the transportation of irradiated nuclear fuel from the facility that is the subject of the licensing action, and the transportation of low level wastes and of high level solid wastes other than irradiated fuel from the facility to depositories, but should not consider environmental effects of reprocessing of irradiated nuclear fuel, the disposal of wastes resulting from reprocessing, or disposal of low and high level solid wastes. In the matter of Vermont Yankee Nuclear Power Corp. (Vermont Yankee Nuclear Power Station), Docket No. 50-271, Memorandum and Order, June 6, 1972. Subsequently, the Appeal Board in that case held that mining and manufacturing of reactor fuel are not within the scope of the environmental review prescribed for nuclear power reactors by NEPA and the Commission's regulations (Decision, October 11, 1972).

In connection with the foregoing, it should be noted that in conjunction with the revision of Appendix D of 10 CFR Part 50 on September 9, 1971, there was transmitted by the Director of Regulation to applicants for licenses to construct or operate nuclear power plants, and made available to the public, a document dated September 1, 1971, which, among other things, indicated that applicants' environmental reports should describe the environmental effects of

the transportation of fuel elements from the fuel fabrication plant to the reactor as well as the transportation of spent fuel elements from the reactor to the fuel reprocessing plant and the transportation of packaged radioactive material from the reactor to low level waste burial grounds.

There are in the United States well over 100 nuclear power reactors in operation, under construction, or on order, and, in addition, three commercial nuclear fuel reprocessing facilities have received operating licenses or are under construction. The existence of a uranium mine or mill, uranium hexafluoride plant, enrichment facility, fuel fabrication plant, fuel reprocessing plant, or ultimate waste depository does not depend upon the licensing of any one nuclear power reactor, nor does the cold or irradiated fuel or waste from any one reactor make more than a fractional contribution, if any, to the effects of such activities or facilities. Uranium mining and milling, uranium hexafluoride production, isotopic enrichment, and fuel fabrication will contribute fuel to many nuclear reactors and the effects associated with fuel reprocessing and waste disposal will be those associated not only with nuclear power reactors now operating or under construction, but also with those that are no longer in operation and those that are planned for the future. There does not appear to be any way to ascertain with any degree of certainty which of the uranium mines or mills, uranium hexafluoride plants, isotopic enrichment facilities, and fuel fabrication plants in existence or to be operated in the future will contribute fuel to a given nuclear power reactor, or which of the various fuel reprocessing plants or commercial burial grounds now in existence or to be constructed from time to time will receive irradiated fuel or wastes from any given nuclear power reactor.

Many of the various elements in the nuclear fuel cycle involve varying methods or processes with different en-

vironmental and other effects and there is no reason to believe that during the useful life of any given nuclear power reactor other methods or processes with different effects will not be developed. In addition, effects of uranium milling and mining, uranium hexafluoride production, fuel element fabrication, spent fuel reprocessing, operation of licensed burial grounds, and transportation incident to each of the above, are, except as those activities are subject to agreement State jurisdiction, the subject of Commission NEPA review proceedings associated with issuance of materials or facility licenses that are separate from the review proceedings for issuance of licenses for nuclear power reactors.

Cost-benefit analyses of nuclear power reactor license applications should contain a full and frank disclosure and consideration of costs and benefits of the proposed action. The results of the application of this principle to the question of inclusion of environmental effects associated with the fuel cycle are not entirely clear. As the above discussion indicates, the fractional contribution, if any, of the environmental effects of the fuel cycle to the cost-benefit balance for a particular nuclear reactor is difficult, and may be impossible, to ascertain with any degree of certainty. This suggests that such matters, if they are to be considered at all, be considered in a generic fashion through the rule making process. The Commission's regulatory staff has prepared a report entitled "Environmental Survey of the Nuclear Fuel Cycle," dated November 6, 1972, which provides a basis for an informed consideration of the generic question of the environmental impact associated with the uranium fuel cycle in light water cooled nuclear power reactor licensing proceedings.

To aid the Commission in its consideration of possible amendments to Appendix D to 10 CFR Part 50 of its regu-

lations that would deal with the question of the account to be taken of the enviromental effects associated with the uranium fuel cycle in individual cost-benefit analyses for light water-cooled nuclear power reactors, interested persons are invited to submit comments and suggestions, together with relevant data and information, with respect to possible additions to 10 CFR Part 50 along the following alternative lines:

(1) In the case of light water-cooled nuclear power reactors, the applicant's environmental report and the Commission's detailed statement shall contain a full discussion of, inter alia, the environmental effects of the transportation of cold fuel to the reactor and irradiated fuel from the reactor to a fuel reprocessing plant and the transportation of low level waste and high level solid wastes (other than irradiated fuel) from the reactor to depositories. Those documents need not cover the environmental effects of uranium mining and milling, the production of uranium hexafluoride, isotopic enrichment, fuel fabrication, reprocessing of irradiated fuel, disposal of low level and high level solid wastes or transportation related to such activities (other than transportation of cold fuel to, and irradiated fuel from, the reactor), since the environmental effects of those activities as related to a particular light water-cooled nuclear power reactor have been analyzed in the Commission's "Environmental Survey of the Nuclear Fuel Cycle" and, when factored into the cost-benefit analysis, are sufficiently small as not to affect significantly the resultant conclusion. The environmental effects of the latter activities will generally be considered in detail in proceedings in which approval for such activities, or closely related activities, is sought.

(2) Or in the case of light water-cooled nuclear power reactors, the applicant's environmental report and the

Commission's detailed statement shall contain a full discussion of, inter alia, the environmental effects of the transportation of cold fuel to the reactor and irradiated fuel from the reactor to a fuel reprocessing plant and the transportation of low level wastes and high level solid wastes (other than irradiated fuel) from the reactor to depositories. In such documents, the contribution of the environmental effects of uranium mining and milling, the production of uranium hexafluoride, isotopic enrichment, fuel fabrication, reprocessing of irradiated fuel, transportation and disposal of wastes resulting from such reprocessing, disposal of low level and high level solid wastes and transportation related to such activities (other than transportation of cold fuel to, and irradiated fuel from, the reactor) to the environmental costs of licensing the nuclear power reactor, shall be as set forth in the following Table S-3 of the Commission's "Environmental Survey of the Nuclear Fuel Cycle":[1]

[1] The "Environmental Survey of the Nuclear Fuel Cycle" provides the supporting data for this summary table.

TABLE S-3

SUMMARY OF ENVIRONMENTAL CONSIDERATIONS FOR NUCLEAR FUEL CYCLE
(NORMALIZED TO MODEL LWR ANNUAL FUEL REQUIREMENTS)

Natural resource use	Total	Effluents — Chemical (MT)	Total
Land (acres):		Gases (including entrainment):[1]	
Temporarily committed	63	SO_x	4400
Undisturbed area	45	NO_x[2]	1170
Disturbed area	18	Hydrocarbons	11.3
Permanently committed	4.6	CO	28.7
		Particulates	1156
Overburden moved (MT×10⁻⁶)	2.7	Other gases:	
Water (gallons×10⁻⁶):		F–	1.0
Discharged to air	163	Liquids:	
Discharged to water bodies	11,052	$SO_4^=$	5.8
Discharged to ground	123	NO_3^-	8.2
Total	11,338	Fluoride	0.4
		Ca^+	5.4
Fossil fuel:		Cl^-	8.2
Electrical energy (mw.-hr.×10⁻⁶)	317	Na	13.5
Equivalent coal (MT×10⁻⁶)	116	NH_3	8.4
Natural gas (s.c.f.×10⁻⁶)	103	Fe	0.4
		Tailings solutions (×10⁻⁶)	240
		Solids	91,000

Effluents—Radiological (curies)	Total	Maximum effect per annual fuel requirement of model 1000 MWe LWR
Gases (including entrainment):		
Rn-222	83	Principally from mills — Maximum annual dose rate <4 percent of average natural background within 5 miles of mill. Results in 0.06 man-rem per annual fuel requirement. Due to dilute concentration and short half-life of principal component, exposure beyond a 5-mile radius is minuscule relative to natural background.
Ra-226	.02	
Th-230	.02	
Uranium	.046	
Tritium (×10⁻⁶)	12	
Kr-85 (×10⁻⁶)	350	
I-129	.002	
I-131	.02	Principally from fuel reprocessing plants—Whole body dose is 4.4 man-rem for population within 50-mile radius. This is <0.005 percent of average natural background dose to this population.
Fission products	1.0	
Transuranics	.004	
Liquids:		
Uranium and daughters	2.4	Principally from milling—included in tailings liquor and returned to ground—no effluents; therefore, no effect on environment.
Ra-226	.027	From UF_6 production—concentration <5 percent of 10 CFR 20 for total processing of 27.5 model LWR annual fuel requirements.
Th-230	.27	
Th-234	.001	From fuel fabrication plants—concentration <1 percent of 10 CFR 20 for total processing 26 annual fuel requirements for model LWR.
Other uranium daughters	.001	
Ru-106	4	From reprocessing plants—maximum concentration <4 percent of 10 CFR 20 for total reprocessing of 26 annual fuel requirements for model LWR.
Tritium (×10⁻⁶)	6.2	
Solids (buried):		
Other than high level	1,200	From mills—included in tailings returned to ground—no significant effluent to the environment.
Thermal (B.t.u. ×10⁻⁶)	3,370	

[1] Estimated effluents based upon combustion of equivalent coal for power generation.
[2] 1.2 percent from natural gas use and process.

The Commission will hold an informal rule-making hearing on possible amendments described in (1) and (2) above on February 1, 1973, at 10 a.m. The location and the presiding officer will be designated in a notice that will be published in the FEDERAL REGISTER in the near future.

Interested persons are invited to attend the hearing and present oral or written statements. Any person who intends to present views at this hearing should furnish in writing his name and the name of the organization he represents to the Secretary of the Commission by January 1, 1973. The hearing will be conducted as a legislative-type hearing. Since the hearing will be part of a rule making, rather than an adjudicatory, proceeding, the provisions of Subpart G, "Rules of General Applicability," of 10 CFR Part 2, the Commission rules of practice, will not be applicable.

Nothing herein shall be construed as affecting the continuing validity of the above-described holdings by the Appeal Board in the Vermont Yankee proceeding during the course of this rule making proceeding, and they shall continue in effect unless and until modified by promulgation of a regulation or other Commission action.

All interested persons who desire to submit written comments or suggestions in connection with the possible amendments to Appendix D of 10 CFR Part 50 or the "Environmental Survey of the Nuclear Fuel Cycle," should send them to the Secretary of the Commission, U.S. Atomic Energy Commission, Washington, D.C. 20545, Attention: Chief, Public Proceedings Staff, within sixty (60) days after publication of this notice in the FEDERAL REGISTER.

Copies of comments on this notice as well as the "Environmental Survey of the Nuclear Fuel Cycle," dated November 6, 1972, may be examined at the Commission's Public Document Room at 1717 H Street NW., Washington, DC 20545. In addition, copies of the environmental survey may be obtained upon request addressed to the Deputy Director for Fuels and Materials, Directorate of Licensing, U.S. Atomic Energy Commission, Washington, D.C. 20545.

(Sec. 161, 68 Stat. 948; sec. 102, 83 Stat. 853, 42 U.S.C. 2201, 4332)

Dated at Germantown, Md., this 10th day of November 1972.

For the Atomic Energy Commission.

PAUL C. BENDER,
Secretary of the Commission.

[FR Doc. 72-19698 Filed 11-14-72; 8:53 am]

ATOMIC ENERGY COMMISSION

[10 CFR Part 50]

[Docket RM-50-3]

ENVIRONMENTAL EFFECTS OF THE URANIUM FUEL CYCLE

Notice of Hearing

On November 15, 1972, the Atomic Energy Commission published in the FEDERAL REGISTER (37 F.R. 24191) a notice of proposed rule making concerning possible amendments to CFR Part 50, appendix D, that would deal specifically with the environmental effects associated with the uranium fuel cycle in the individual cost-benefit analyses for light water-cooled power reactors. The notice scheduled an informal rule making hearing on the possible amendments on February 1, 1973, at 10 a.m.

The location of the hearing will be New Executive Office Building, Room G-2008, 17th and H Streets NW., Washington, D.C.

A hearing board consisting of Max D. Paglin, Esq.—Chairman, Dr. Martin J. Steindler and Dr. John C. Geyer will preside.

As stated in the November 15, 1972, notice, the hearing will be part of a rule making, rather than an adjudicatory, proceeding and the provisions of Subpart G, "Rules of General Applicability," of 10 CFR Part 2, the Commission's rules of practice, will not be applicable.

The procedural format for the hearing will follow the legislative pattern, and no discovery or cross-examination will be utilized. It should be noted, however, that the report prepared by the Commission's regulatory staff, entitled 'Environmental Survey of the Nuclear Fuel Cycle," dated November 1972, which provides a basis for an informed

consideration of the generic question of the environmental impact associated with the uranium fuel cycle in light water-cooled nuclear power reactor licensing proceedings, is available to members of the public at the Commission's public document room at 1717 H Street NW., Washington, D.C. 20545. In addition, that report contains extensive references to background documents available to members of the public at the Commission's public document room.

The hearing will be conducted as informally and as expeditiously as practicable, consistent with affording the participants a reasonable opportunity to present their positions. Those participating in the hearing may, but need not be, represented by counsel.

Relevant written statements may be received for the record and those participating may, depending upon the number of requests received and the time available, be permitted to make brief oral statements of their views either in addition to, or in lieu of, written submissions. Persons making oral statements will not be sworn. Such persons, however, as well as persons offering written submissions at the hearing, will be subject to questioning by the presiding hearing board. All written comments and suggestions received pursuant to the invitation therefor set forth in the November 15, 1972, notice will be incorporated in the record of the proceeding.

The hearing board is authorized to take all necessary and appropriate action to control the course of the hearing, including, among other things, the holding of one or more procedural planning sessions. A transcript of the hearing will be made, and a copy of the transcript, together with copies of all documents presented at the hearing, will be placed in the Commission's public document room, 1717 H Street NW., Washington, D.C., where they will be available for inspection by members of the public.

At the conclusion of the hearing the record will be held open for a period of 30 days during which time any person may file such supplementary written statements as may be deemed appropriate in light of the hearing record. After the 30-day period expires, the presiding hearing board, without rendering any decision or making any recommendation, will forward the transcript of the hearing to the Commission together with an identification of issues raised at the hearing. The Commission will carefully consider the transcript of the hearing and the comments and suggestions submitted pursuant to the November 15, 1972, notice as well as other relevant considerations and factors, and, after reaching its determination in the rule making proceeding, will cause an appropriate notice to be published in the FEDERAL REGISTER.

(Sec. 161, 68 Stat. 948; sec. 102, 83 Stat. 853; 42 U.S.C. 2201, 4332)

Dated at Washington, D.C., this 27th day of December 1972.

For the Atomic Energy Commission.

PAUL C. BENDER,
Secretary of the Commission.

[FR Doc. 73-123 Filed 1-2-73; 8:45 am]

Title 10 — Energy

CHAPTER I — ATOMIC ENERGY COMMISSION
PART 50 — LICENSING OF PRODUCTION AND UTILIZATION FACILITIES

Environmental Effects of the Uranium Fuel Cycle

On November 15, 1972, the Atomic Energy Commission published in the FEDERAL REGISTER a notice of consideration of possible amendments to Appendix D, Interim Statement of General Policy and Procedure: Implementation of the National Environmental Policy Act, 10 CFR Part 50, Licensing of Production and Utilization Facilities (37 FR 24191). The amendments proposed here supplement our established rules for fulfilling section 102(2)(C) procedures of NEPA. The amendments address the question whether to consider the environmental effects associated with the uranium fuel cycle in the individual cost-benefit analyses for light-water-cooled nuclear power reactors. The Atomic Safety and Licensing Appeal Board had earlier held that some such effects should be considered while others should not.[1]

The proposed amendments set forth two alternative approaches to considering the environmental effects associated with the uranium fuel cycle. Under the first, such environmental effects would not have to be considered in applicants' environmental reports and Commission detailed statements of environmental considerations since, if factored into individual cost-benefit analyses, they would be sufficiently small as not to affect significantly the resultant conclusion. Under the second alternative, the environmental effect as-

[1] Vermont Yankee Nuclear Power Corp. (Vermont Yankee Nuclear Power Station), ALAB-56, ALAB-73 (June 6, 1972 and October 11, 1972).

sociated with the uranium fuel cycle, albeit small, would be factored into individual cost-benefit analyses in the form of numerical values derived from the instant proceeding. The second alternative has been adopted by the Commission as an effective rule, with certain clarifying and editorial changes. Insofar as this rule differs from the Appeal Board decisions in "Vermont Yankee" supra, those decisions have no further precedential significance. The Commission also notes that adoption of this amendment is without prejudice to consideration of whether or not a full generic environmental impact statement on the uranium fuel cycle should be issued pursuant to 10 CFR Parts 11 and 51 of the Commission's regulations.

The FEDERAL REGISTER notice announced the availability for comment of the "Environmental Survey of the Nuclear Fuel Cycle," dated November 1972, prepared by the Commission's Regulatory staff. This document was designed to serve as a primary data base for the proposed amendment and not as an analysis of alternatives and costs and benefits of the entire uranium fuel cycle. Indeed, certain portions of that overall fuel cycle are undergoing separate examination and are not involved in this proceeding. These include: (i) An environmental statement in support of a recommendation by the General Manager to continue the present program for developing Federal repositories for commercial high level wastes (38 FR 29350), and (ii) a separate rule making proceeding examining transportation of UO_2 fuel to and from light water reactors and transportation of solid wastes from such reactors to waste burial grounds (38 FR 3334).

In addition, another fuel cycle for light water reactors is under study by the staff. Typical programs underway on this subject include: (i) Preparation of a generic environmental impact statement concerning potential programs for

recycling plutonium in commercial light-water reactors (39 FR 5536), (ii) analysis of methods for disposal of wastes contaminated with plutonium, and (iii) an environmental analysis of the proposed amendment to 10 CFR 71 that would require significant quantities of plutonium to be shipped as a solid in packages providing at least double containment (38 FR 20482).

The survey described stages of the fuel cycle for the purpose of determining whether the cost-benefit analysis required by NEPA and our regulation (10 CFR Part 50, Appendix D) for environmental impact studies in licensing proceedings should include numbers quantifying effects of the uranium fuel cycle. The purpose of this proceeding was to make determinations as to whether certain elements should be factored into impact statements to be utilized in other proceedings; the purpose was not to undertake a full environmental review of the uranium fuel cycle. In short, this proceeding addresses a procedural question involving the implementation of NEPA's requirement for cost-benefit analyses in impact studies. For this reason, no environmental impact statement has been prepared in connection with the rule adopted today.

All interested persons were invited to submit written comments and suggestions in connection with the proposed amendments and the Environmental Survey within 60 days after publication of the notice in the FEDERAL REGISTER. In addition, an informal rule making hearing was held on February 1, 1973, to permit the presentation of written and oral views on the Environmental Survey and the alternative approaches to consideration of the environmental effects associated with the uranium fuel cycle.

On January 3, 1973, the Commission issued a Supplemental Notice setting forth the procedures which were to

be followed in the informal rule making hearing (38 FR 50). The notice stated, among other things, that since the hearing would be part of a rule making rather than an adjudicatory proceeding, the provisions of Subpart G, Rules of General Applicability, of Part 2 of the Commission's rules of practice would not be applicable and that, therefore, such procedural features as discovery and cross-examination would not be utilized. The notice provided, however, that the participants in the hearing would be subject to questioning by the presiding hearing board. The notice further provided that at the conclusion of the hearing, the record was to be held open for a period of 30 days during which time any person could file supplementary written comments deemed appropriate in light of the hearing record. After the expiration of the 30-day period, the presiding hearing board, without rendering any decision or making any recommendation, was to forward the hearing transcript to the Commission together with an identification of issues raised at the hearing.

Written comments were received from 46 individuals and organizations representing Federal and State agencies, industry, public utilities, environmental and citizen groups, and private citizens. Participants in the informal rule making hearing included the Commission's Regulatory staff; the Environmental Protection Agency; the Mapleton Intervenors of Midland, Michigan; Westinghouse Electric Corporation; Consolidated National Intervenors and the Union of Concerned Scientists, jointly; the Atomic Industrial Forum; the Consolidated Utilities, composed of fourteen utilities appearing jointly; the New York State Department of Environmental Conservation; and the Minnesota Pollution Control Agency. In addition, two individual members of the public made limited appearances.

In its "Report to the Commission by the Nuclear Fuel Cycle Hearing Board," submitted on July 6, 1973, pursuant

to a Supplemental Notice of Hearing published on January 3, 1973, the presiding hearing board identified a number of issues which it believed were raised at the hearing and in the written comments. The first issue identified concerned a challenge by CNI/UCS to the procedures used by the Commission for the hearing. That participant argued that for any rulemaking hearing dealing with the environmental effects of the nuclear fuel cycle on a generic basis to be legally valid, the hearing must incorporate the same adjudicatory procedural features used in individual production and utilization facility licensing proceedings, including the rights of discovery and cross-examination. On the basis of this contention, the participant recommended adoption of a "third alternative" which would provide for an "on-going generic hearing" requiring preparation and circulation of an environmental impact statement. Under this alternative, parties to individual reactor licensing proceedings would be permitted to participate in an "adjudicatory" rule making proceeding, the findings of which would be incorporated into the record of individual licensing hearings.

The Commission has considered this challenge to the legal validity of the present rule making proceeding and the arguments in opposition which were filed by other parties. In our view, the procedures adopted provide a more than adequate basis for formulation of the rule we adopted. All parties were fully heard. Nothing offered was excluded. The record does not indicate that any evidentiary material would have been received under different procedures. Nor did the proponent of the strict "adjudicatory" approach make an offer of proof — or even remotely suggest — what substantive matters it would develop under different procedures. In addition, we note that all documents including the Survey were available to the parties several weeks be-

fore the hearing, and the Regulatory staff, though not requested to do so, made available various drafts and handwritten notes.[2] Under all of the circumstances, we conclude that adjudicatory type procedures were not warranted here.

The second area in which issues were identified by the presiding hearing board related to the scope and depth of the underlying Environmental Survey. One issue was whether, in light of the comments in the record, substantial revision of the survey should be made prior to adoption of a final rule. Also identified was the issue of whether the Administrative Procedure Act requires reopening of the proceeding to permit comment on any revised survey and whether such reopened proceeding should be made a proceeding conducted in the manner of the original proceeding in which comment would be invited on all aspects of the nuclear fuel cycle; or whether such proceeding should be limited to comment only on the revisions to the Survey.

In discussing the issues in this area, the presiding hearing board mentioned, among other things, the factors of safeguards against sabotage and diversion of nuclear materials and plutonium handling. The board also indicated that arguments had been advanced that the Survey was unreliable with respect to high level waste disposal in that facilities for such disposal are presently non-existent.

Sabotage and diversion receive considerable attention in licensing of individual fuel cycle facilities. The issuance of any special nuclear material license involving significant quantities of such material is contingent upon a finding by the AEC that the required accountability and physical se-

[2] Some or all of these items might not have been provided under rigid adjudicatory rules. For example, on the one occasion when CNI/UCS requested a specific document, it was promptly made available, even though it was an internal staff memorandum written for the Commissioners themselves.

curity systems are adequate to provide reasonable protection against acts of sabotage and diversion of materials. Beyond this, insofar as environmental impact is concerned, sabotage and diversion may be viewed in the context of possible contributing factors, among others, to accident conditions. The Environmental Survey does, in fact, consider a number of postulated accidents and their environmental effects. The postulated accidents thus considered in the Survey are deemed to be a reasonable representation of the environmental effects that could result from the more credible acts of sabotage.

Those aspects of the uranium fuel cycle which involve plutonium handling, namely recovery and storage, were described in the Environmental Survey. However, other forms of plutonium handling were not discussed in the survey because the survey is applicable only to light-water-power reactors using conventional uranium dioxide fuel. Reactors utilizing plutonium recycle fuel fall outside the Survey's scope of coverage and, therefore, the values in the Summary Table are inapplicable. As stated earlier, however, the Commission is presently drafting an environmental impact statement covering all aspects of the full-scale use of plutonium in light-water reactors, including the fuel cycle.

Considerable information was presented at the hearing on high level waste storage, utilizing a retrievable surface storage facility. A description was given of such facility, the normal radiological effluents, and a maximum credible accident. The estimated normal annual radiological release was 0.005 curies. Although the ultimate capacity of the facility would be about 80,000 canisters of waste, corresponding to about 8,000 annual fuel requirements (AFR), the initial capacity will be substantially less. Even if one assumed that the annual release from the facility were associated with a single annual fuel requirement, the fission

product release per annual fuel requirement would be 0.005 Ci/AFR. Since the release of solid fission products and actinides from the model reprocessing plant is estimated at 1.004 Ci/AFR, the omission of waste repository effluents from the original Environmental Survey did not materially affect the releases shown in the Summary Table. However, the 0.005 Ci/AFR value has been added to the 1.004 Ci/AFR value in the Summary Table for a combined total, when rounded off, of 1.01 Ci/AFR. While such a waste storage facility has not been constructed, preliminary conceptual designs have been developed using existing technology based on well established data and techniques.

The Commission believes that the Survey and hearing record provide an adequate data base for the regulation adopted. Revisions to the chemical effluents in Table S-3 have been made to reflect corrections or suggestions entered into the hearing record on UF_6 conversion facilities, UO_2 conversion plants and mining operations. Minor corrections with respect to radioactive effluents have been made and in no case do these corrections increase the effluent effects by more than .25 percent of natural background. To conform the table precisely to the text of the Survey, the values for iodine-129 and 131 releases have been changed from .002 and .02 curies to .0024 and .024 curies, respectively. In addition, values for exposure of workers and the general public in the transportation of radioactive materials covered in the Survey have been added to the Summary Table. To incorporate these changes, to incorporate data on the retrievable surface storage facility in high level wastes described in the hearing, and to add information suggested in comments received as a part of the hearing record, the Environmental Survey has been revised and is being issued in revised form concurrently with promulgation of this

amendment.[3] In view of the fact that these revisions are minor and reflect the record already developed, we see no occasion for reopening this proceeding.

A third area in which issues were identified by the presiding hearing board relates to the Environmental Survey's use of qualitatively styled and allegedly undefined descriptive phrases for its conclusions regarding the magnitude of the environmental impact. One issue is whether the Survey should be revised to define more precisely the magnitude and anticipated ranges of variables pertinent to an assessment of the environmental impact. The Summary Table, S-3, to be used as a basis for evaluating the environmental effects in a cost-benefit analysis for a reactor quantifies all releases, and relates maximum effects to recognizable standards where practical. The Commission believes that providing ranges of variables relevant to assessing environmental impact would serve little or no constructive purpose here since conservatism was utilized in deriving the Summary Table values, and thus, these values already reflect an environmental impact greater than that which is truly anticipated. In addition, developing a range of values would have required separate investigations of multiple factors at over 150 mines, some 19 mills, 2 conversion plants, 3 enrichment plants, and 10 fuel fabrication facilities — to arrive at a range of values augmenting numbers already reflecting substantial conservatism.

Another issue identified in this area is whether more extensive analyses of the long-term environmental effects of waste storage and disposal are necessary to sustain the validity of the conclusions in the Survey. The Commission

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[3] Among other things, the revised Survey refers to and gives excerpts from an analysis by the Environmental Protection Agency that show that the CNI/UCS analysis of the Nuclear Fuel Services operation does not accurately represent the most recent operating history of NFS.

believes that sufficient data were presented regarding engineered waste storage facilities to justify the conclusion that the contribution of waste storage and disposal to the total environmental impact of the fuel cycle is relatively insignificant. However, as more information on high level waste storage and disposal systems becomes available as a result of the environmental impact statement on high level waste storage referenced earlier, a more definitive assessment of the environmental impact can be undertaken and the Survey revised accordingly, as appropriate.

The third issue raised in this area is whether the averaging of environmental effects and the use of models for each fuel cycle step produced values sufficiently conservative to warrant the Survey's conclusion of negligible environmental impact. The "model" facilities defined for the Environmental Survey represent the true industry average for the UF_6 conversion, enrichment, and reprocessing portions of the fuel cycle. The model mill size chosen is near the upper range of mill sizes, and the major environmental effects from milling result from the airborne effluents and tailings waste disposal steps common to all mills. Choosing a relatively large mill as a basis tended to make local environmental effects large, and hence conservative. The fuel fabrication model plant is typical of two plants that produce about 60 percent of the fuel manufactured in the United States today and conservatively represents the remainder. The effluents from the model facility were estimated without taking credit for recently installed pollution-abatement equipment and the distance from the plant to the near site boundary of the model represents the smallest distance of any actual fuel fabrication plant. These model and effluent characteristics produce conservative estimates of environmental effects.

A fourth area in which the hearing board identified an issue relates to suggestions for revision and re-examination

of the Environmental Survey at periodic intervals. While the Commission agrees with the suggestions that the Survey be re-examined from time to time to appropriately accommodate new technology and information, it does not believe it necessary or advisable to impose any specific time limit. In our view, revision should be based on growth in the data base, not on any fixed and arbitrary time period. Should future revisions to the Survey necessitate changes in the Summary Table, further rule making will be undertaken and the public afforded an opportunity for comment.

A fifth issue identified by the hearing board is whether any provision should be made for exempting or limiting the applicability of a final rule insofar as pending licensing cases are concerned. In view of the fact that the environmental effects of the uranium fuel cycle have been shown to be relatively insignificant, the Commission believes that it is unnecessary to apply the amendment to applicant's environmental reports submitted prior to its effective date or to Final Environmental Statements for which Draft Environmental Statements have been circulated for comment prior to the effective date. However, Draft Environmental Statements prepared but not circulated for comment prior to the effective date will be revised in accordance with the provisions of the amendment.

The sixth issue identified is whether the Commission should re-examine the proposed "Alternatives" in light of the record of the proceeding to determine whether modifications are necessary or desirable. In reviewing the record of the rule making hearing the Commission finds general approval for its generic approach to the consideration to be given to the environmental effects associated with the uranium fuel cycle. Many participants advocated adoption of one alternative or the other, other participants proposed modified versions of the alternatives, and one participant

advocated adoption of a third alternative which was discussed earlier. After examining these proposals, and after re-examining its own proposed alternatives, the Commission has adopted a slightly modified version of Alternative 2. The Commission, as did many of the hearing participants and commentators, favors the approach of Alternative 2 over that of Alternative 1 because the former conforms with the requirements of subsections 3 and 8 of section A of Appendix D to 10 CFR Part 50 in that it quantifies, to the fullest extent practicable, the environmental effects of the uranium fuel cycle in individual cost-benefit analyses. Incorporation of the Summary Table values into cost-benefit analyses in environmental reports and detailed statements will also help to assure more complete and meaningful documents. The changes in the effective amendment are clarifying and editorial in nature.

The seventh issue identified is whether further clarification is necessary to make clear that the Environmental Survey and the Summary Table of values are purely descriptive and are not intended as operating limits which may be imposed in licensing and regulatory actions with respect to the various fuel cycle facilities. Neither the effective amendment nor the Environmental Survey state or imply that the values in the Summary Table are to be imposed as operating limits on present and future fuel cycle facilities. Such limits are established and governed by other AEC regulations, principally, the provisions of Part 20 of Title 10 of the Code of Federal Regulations, "Standards for Protection Against Radiation." Further clarification is considered unnecessary.

The presiding hearing board raised two additional items which it believed merited Commission attention. The first was more in the nature of a suggestion to the Commission that the Regulatory staff be directed to assure the ready

availability of the background references, reference materials, and various calculations which served as the basis for the conclusions in the Survey. Copies of all non-copyrighted material, together with prior drafts of the Environmental Statement marked up by the staff, and over 100 pages of handwritten calculations were given to the Public Document Room on January 5, 1973. Therefore, the Commission believes that the staff had already complied with this suggested directive by making these background references, uncopyrighted reference materials, previous drafts and the various calculations available in the AEC's Public Document Room.

The second item referred to is whether the Environmental Survey should have discussed alternative processes with regard to fuel cycle operations. The purpose of the Survey was to provide a data base from which numerical values could be derived which would reflect the environmental impact associated with the uranium fuel cycle. These values would then be factored into cost-benefit analyses for individual reactors under the alternative adopted. Whenever possible, Survey data were based on actual operating fuel cycle facilities in order to produce numerical values reflecting real or actual environmental impact. Where this was not possible, conservatism was utilized. As stated earlier, the Environmental Survey is not an impact statement, and therefore, a discussion of alternatives is not required. In addition, the Commission does not believe that the Survey is the appropriate place to discuss alternatives in view of the fact that alternatives are considered in the NEPA context in individual licensing actions on fuel cycle facilities. On the basis of the foregoing and consideration of the comments received, the record of the hearing and other factors involved, the Commission has adopted the amendment set forth below. The amendment is essentially identical to the

second alternative contained in the November 15, 1972 FEDERAL REGISTER notice (37 FR 24191), except for minor clarifying and editorial changes.

Pursuant to the Atomic Energy Act of 1954, as amended, and sections 552 and 553 of Title 5 of the United States Code, the following amendment to Appendix D to 10 CFR Part 50 is published as a document subject to codification.

1. A new subsection 15 is added to section A to read as follows:

15. (a) In applicant's environmental reports and the Commission's detailed statements for light-water-cooled nuclear power reactors, the contribution of the environmental effects of uranium mining and milling, the production of uranium hexafluoride, isotopic enrichment, fuel fabrication, reprocessing of irradiated fuel, transportation of radioactive materials and management of low level wastes and high level wastes related to uranium fuel cycle activities to the environmental costs of licensing the nuclear power reactor, shall be as set forth in the following Table S-3 of the Commission's "Environmental Survey of the Uranium Fuel Cycle." No further discussion of such environmental effects shall be required.

(b) This section does not apply to any applicant's environmental report submitted pursuant to section 4 prior to June 6, 1974, or to any Final Environmental Statement for which a Draft Environmental Statement had been circulated for comment prior to June 6, 1974.

Effective date. The foregoing amendment is effective on June 6, 1974.

(Sec. 161, Pub. L. 83-703, 68 Stat. 948; Sec. 102 Pub. Law 91-190, 83 Stat. 853; (42 U.S.C. 2201, 4332)).

Dated at Washington, D.C. this 16th day of April 1974.

For the Atomic Energy Commission.

PAUL C. BENDER,
Secretary of the Commission.

TABLE S-3. — *Summary of environmental considerations for uranium fuel cycle*

[Normalized to model LWR annual fuel requirement]

Natural resource use	Total	Maximum effect per annual fuel requirement of model 1,000 MWe LWR
Land (acres):		
Temporarily committed	63	
Undisturbed area	45	
Disturbed area	18	Equivalent to 90 MWe coal-fired powerplant.
Permanently committed	4.6	
Overburden moved (millions of MT)	2.7	Equivalent to 90 MWe coal-fired powerplant.
Water (millions of gallons):		
Discharged to air	156	≈2 percent model 1,000 MWe LWR with cooling tower.
Discharged to water bodies	11,040	
Discharged to ground	123	
Total	11,319	<4 percent of model 1,000 MWe LWR with once-through cooling.
Fossil fuel:		
Electrical energy (thousands of MW-hour)	317	<5 percent of model 1,000 MWe LWR output.
Equivalent coal (thousands of MT)	115	Equivalent to the consumption of a 45 MWe coal-fired powerplant.
Natural gas (millions of scf)	92	<0.2 percent of model 1,000 MWe energy output.
Effluents—chemical (MT):		
Gases (including entrainment):[1]		
SO_x	4,400	Equivalent to emissions from 45 MWe coal-fired plant for a year.
NO_x[2]	1,177	
Hydrocarbons	13.5	
CO	28.7	
Particulates	1,156	
Other gases:		
F-	.72	Principally from UF_6 production enrichment and reprocessing. Concentration within range of state standards—below level that has effects on human health.
Liquids:		
SO_4=	10.3	From enrichment, fuel fabrication, and reprocessing steps. Components that constitute a potential for adverse environmental effect are present in dilute concentrations and receive additional dilution by receiving bodies of water to levels below permissible standards. The constitutents that require dilution and the flow of dilution water are: NH_3—600 cfs. NO_3—20 cfs. Fluoride—70 cfs.
NO_3-	26.7	
Fluoride	12.9	
Ca^{++}	5.4	
Cl-	8.6	
Na^+	16.9	
NH	11.5	
Fe	.4	
Tailings solutions (thousands of MT)	240	From mills only—no significant effluents to environment.
Solids	91,000	Principally from mills—no significant effluents to environment.
Effluents—Radiological (curies):		
Gases (including entrainment):		
Rn-222	75	Principally from mills—maximum annual dose rate <4 percent of average natural background within 5 mi of mill. Results in 0.06 man-rem per annual fuel requirement.
Ra-226	.02	
Th-230	.02	
Uranium	.032	
Tritium (thousand)	16.7	Principally from fuel reprocessing plants—Whole body dose is 8 man-rem per annual fuel requirement for population within 50 mi radius. This is <0.005 percent of average natural background dose to this population. Release from Federal Waste Repository of 0.005 Ci/yr has been included in fission products and transuranics total.
Kr-85 (thousands)	350	
I-129	.0024	
I-131	.024	
Fission products and transuranics	1.01	
Liquids:		
Uranium and daughters	2.1	Principally from milling—included in tailings liquor and returned to ground—no effluents; therefore, no effect on environment.
Ra-226	.0034	From UF_6 production-concentration 5 percent of 10 CFR 20 for total processing of 27.5 model LWR annual fuel requirements.
Th-230	.0015	
Th-234	.01	From fuel fabrication plants—concentration 10 percent of 10 CFR 20 for total processing 26 annual fuel requirements for model LWR.
Ru-106[3]	.15	From reprocessing plants—maximum concentration 4 percent of 10 CFR 20 for total reprocessing of 26 annual fuel requirements for model LWR.
Tritium (thousands)	2.5	
Solids (buried):		
Other than high level	601	All except 1 Ci comes from mills—included in tailings returned to ground—no significant effluent to the environment, 1 Ci from conversion and fuel fabrication is buried.
Thermal (billions)	3,360	<7 percent of model 1,000 MWe LWR.
Transportation (man-rem): Exposure of workers and general public	.334	

[1] Estimated effluents based upon combustion of equivalent coal for power generation.
[2] 1.2 percent from natural gas use and process.
[3] Cs-137 (0.075 Ci/AFR) and Sr-90 (0.004 Ci/AFR) are also emitted.

(FR Doc. 74-9076 Filed 4-19-74; 8:45 am)

NUCLEAR REGULATORY COMMISSION

[Docket RM-50-3]

ENVIRONMENTAL EFFECTS OF THE URANIUM FUEL CYCLE

General Statement of Policy

Two recent decisions by the United States Court of Appeals for the District of Columbia Circuit raise significant questions regarding the future course of Commission licensing activities over the coming months. The decisions are *Natural Resources Defense Council, et al.* v. *NRC,* Nos. 74-1385 and 74-1586; and *Aeschliman, et al.* v. *NRC,* Nos. 73-1776 and 73-1867 (July 21, 1976). The purpose of this policy statement is to indicate how the Commission intends to conduct its licensing activities pending resolution of the several legal questions raised by the decisions. This statement is not intended to resolve, or indicate any resolution of, the question whether the particular licenses before the court in these cases are to be continued, modified, or suspended during the proceedings called for; since the court refused an explicit request to set aside these licenses, the Commission's view is that the court expects it to resolve this question in formal proceedings, in light of the facts and the applicable law. Nor is this statement intended to reflect any position the Commission may take in further litigation in these cases.

As this statement was in the final stages of preparation, the Commission received a proposal for rulemaking from the Natural Resources Defense Council concerning many of the issues discussed herein. Comments on that proposal are solicited in a coordinate *Federal Register* notice, also published today. Initial consideration of the petition indicates that it varies in several respects from this policy

statement. Some of these variations (notably, rules proposed for existing construction permits, LWA's and operating licenses) may reflect differing legal interpretations; however, in general, publication of the present policy statement will not irretrievably commit the Commission or others to a course inconsistent with the proposals made. The Commission believes that the need for immediate guidance to its staff and licensing boards, and to the interested public, requires publication of the present statement. The Commission will carefully consider the suggestions of the NRDC and, indeed, is aware that others should have the opportunity to comment on these proposals and to offer suggestions for implementing the recent court of appeals decisions.

While other questions were decided, the principal impact of the court's opinions on Commission actions arises from holdings on three related points:

1. A rule adopted by the former AEC in 1974 to codify the environmental effects of the uranium fuel cycle for individual light-water nuclear power reactors, 10 CFR 51.20(e), was inadequately supported insofar as it treated the reprocessing of spent fuel and of radioactive wastes;

2. The National Environmental Policy Act of 1969 requires analysis of these reprocessing and waste issues, either through rulemaking or in individual licensing proceedings, as a prerequisite to Commission licensing of a nuclear power plant;

3. If the Commission wishes to revise its rule, it must do so by procedures more demanding than the notice-and-comment procedures required for informal rule-

making by the Administrative Procedure Act. (The court divided 2-1 on the question of further procedures, Judge Tamm stating that notice-and-comment procedures would suffice.)

Even though review of one or more of these rulings may be sought, prudent and responsible regulation requires immediate steps to further analyze the reprocessing and waste disposal issues. Accordingly, the Commission's staff has been directed to review the existing literature thoroughly and to produce on an expedited basis a revised and adequately documented environmental survey on the probable contribution to the environmental costs of licensing a nuclear power reactor that is attributable to the reprocessing and waste management stages of the uranium fuel cycle. It is expected that this statement will be ready on or about September 30, 1976.

The Commission intends to reopen the rulemaking proceeding on the Environmental Effects of the Uranium Fuel Cycle, Docket RM-50-3 for the limited purposes of:

1. Supplementing the record on the reprocessing and waste management issues; and

2. Determining whether or not on the basis of the supplemented record, Table S-3 of 10 CFR 51.20(d) should be amended and, if so, in what respect.

The revised environmental survey just described, together with any amendments to Table S-3 that may be proposed as a consequence of that analysis, will be the basis for these reopened proceedings. We understand the court to regard the procedures originally used as capable of fully ventilating the issues involved, permitting a reasoned Commission

discussion and producing a valid rule.[1] These procedures, which included an oral hearing and questioning of witnesses by the presiding panel, are set forth at 38 Fed. Reg. 50, January 30, 1973. Alternative procedures, modeled on those to be employed by the Commission in its forthcoming GESMO hearings, have been suggested by the Natural Resources Defense Council in the petition for rulemaking referenced above. An election of procedures to be followed will be made in a forthcoming notice of hearing, following the comment period on that petition, which closes August 31, 1976.

While the extended rulemaking is in progress, the Commission and its licensing boards will be called upon to decide whether nuclear reactor licenses can issue, and whether previously granted licenses should be suspended, modified, or set aside.

In view of the court's recent decisions, the Commission has concluded that no new full-power operating license, construction permit or limited work authorization should be issued pending the developments to be described below. This conclusion is based on recognition that the grant of each of those authorizations, permits, or licenses is premised upon the completion of an adequate environmental impact statement, and that under the subject decisions, absent an acceptable substitute for those portions of Table S-3 which

[1] The court understood, as do we, that any such rule would be but one step in national planning for radioactive waste management. The Energy Research and Development Administration has undertaken a comprehensive environmental impact statement, now scheduled for issuance in draft form in April, 1977. A variety of other measures, including this agency's development of goals, objectives, and general environmental criteria for waste management, as also under way. As the Commission then proceeds to develop its regulatory framework for waste management, appropriate environmental impact statements will be prepared. Obviously, areas of uncertainty which may be developed by the present study will help to shape these efforts.

the court has found inadequately supported, the basis for a complete environmental impact statement will not be in place.

The Commission recognizes that this conclusion may have significant impacts on the availability and costs of nuclear power facilities. At present, two nuclear power plants are at the stage where an operating license might otherwise have been issued imminently; two plants will reach that stage within the next four months. Additionally, a decision on whether to issue construction permits for five power plants would in all probability have been reached by the end of the year. The number of plants affected by a cessation of licensing grows with time, and there are obvious costs incurred when plants stand idle. Since existing concepts for reprocessing and waste technology do not vary significantly with the design of nuclear power generating facilities, it is extremely unlikely that the revised environmental survey will result in any modification of these facilities. Only the possibility of discontinuing their construction or use is likely to be at issue.

The Commission does not believe that the licensing constraints here announced must necessarily continue until a rulemaking employing oral hearing procedures has been completed, a process which could take fully a year. If the revised environmental survey justifies, notice and comment rulemaking can provide the basis for an interim rule which would be an adequate substitute for Table S-3 pending issuance of the final rule. In addition to the revised environmental survey, the basis for such an interim rule would include an evaluation of the environmental impact of using that interim rule as a basis for licensing until the final rule is in place, and an assessment of the impact of a suspension of further licensing during that time period. The Commission has directed its staff to develop this information by

September 30, 1976. Since interim rulemaking would be accomplished through notice and comment procedures only, an interim rule might be promulgated as early as December 1976, providing a basis for licensing at that time.

The Commission also has under consideration the possibility of a future request to the court of appeals for a stay of its mandate, such a request to be explicitly supported by an appraisal of the likely impact of the court's decision and of granting the stay. If granted, a stay so supported might also provide the basis for resumed licensing.

Finally, some Commission licensing actions do not require preparation of an environmental impact statement, depending upon the circumstances. See 10 CFR 51.5(b). In these instances, which may include authorizations for fuel loading, low-power testing, or amending a construction permit, the Commission's regulations require that an environmental impact appraisal be undertaken in order to determine whether an environmental impact statement must be prepared. 10 CFR 51.5(c). The absence of an effective Table S-3 would not preclude licensing that is not dependent upon an environmental impact statement. Consequently the Commission is instructing its staff and licensing boards that they may continue to take such actions where an environmental impact assessment has been made and has resulted in a determination that no environmental impact statement need be prepared. See 10 CFR 51.5, 51.7.

In all other instances, the staff and the licensing boards shall continue to process applications and hold hearings up to the point of, but not including, licensing. However, in any contested proceeding, reprocessing and waste management issues should be deferred pending completion of the interim rulemaking, unless the evidentiary record on those issues has already been completed and is adequate for decision. The Commission wishes to avoid the needless duplication which proceeding both by rulemaking and in individual contested licensing hearings would entail and the overall delay that would result. Where a proceeding is uncontested, licensing shall nevertheless be deferred until the Commission has published the revised environmental survey, documenting the probable contribution to the environmental costs of licensing a nuclear power reactor which is attributable to the reprocessing and waste management stages of the uranium fuel cycle. These values may then be used in reaching a NEPA cost/benefit assessment prerequisite to licensing. Similarly, where a license has been issued, but the action has not become final within the Commission because of pending appeal or possible Commission review, final action or review should be deferred pending publication of the environmental survey; other issues, including as appropriate the issue of suspending activity under the license in question, may be resolved in the interim.

With regard to the *Vermont Yankee* and *Midland* licenses at issue in the two court of appeals cases, we agree with the view expressed by the Commission's staff that questions of modification or suspension should be resolved in formal proceedings in light of the facts and the applicable law. Since we have decided that reprocessing and waste management issues should be treated generically by rulemaking rather than on a case-by-case basis, the initial question on remand of the *Vermont Yankee* and *Midland* orders will be whether the licenses should be continued, modified, or suspended until an interim rule has been made effective. In resolving this question, the Commission intends to assign the matter to licensing boards with instructions to call for briefs from the parties followed by evidentiary hearings if necessary.[2] The same question would arise on a request for

[2] An evidentiary hearing on other issues will be required in *Midland*, barring further review. That hearing, however, should not be commenced until the *Midland* decision has become final.

a show cause order seeking the suspension or modification on fuel cycle rule grounds of any other nuclear power plant license.

It is the Commission's understanding that resolution of this question turns on equitable factors well established in prior practice and case law. Such factors include whether it is likely that significant adverse impact will occur until a new interim fuel cycle rule is in place; whether reasonable alternatives will be foreclosed by continued construction or operation; the effect of delay; and the possibility that the cost/benefit balance will be tilted through increased investment. See *Coalition for Safe Nuclear Power* v. *AEC*, 463 F.2d 954 (D.C. Cir. 1972); *San Onofre*, Units 2 and 3, 7 AEC 986, 996-97 (June 1974). General public policy concerns, the need for the project, the extent of the NEPA violation, and the timeliness of objections are also among the pertinent considerations. See, e.g., *Conservation Society of Southern Vermont Inc.* v. *Secretary of Transportation*, 408 F.2d 927, 933934 (2d Cir. 1974), *vacated on other grounds and remanded*, 423 U.S. 809 (1975); *Greene County Planning Board* v. *FPC*, 455 F.2d 412, 424-425 (2d Cir.), *cert. denied*, 409 U.S. 849 (1972); *City of New York* v. *United States*, 337 F. Supp. 150, 163 (E.D.N.Y.) (three-judge court).[3]

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[3] In its petition for rulemaking, noticed today, the Natural Resources Defense Council suggests that the appropriate course for the interim period concerning facilities which hold effective licenses should be as follows:

Facilities which received operating licenses before July 21, 1976:

NRC will order suspension of the operating license for any such facilities unless the licensee can establish that:

(1) Continued operation of the plant is essential to maintain a reliable supply of energy to the reliability region of which the plant is a part, taking into account alternative available sources of supply (including purchase power), historical reserve requirements, and available interconnections for transmitting power;

(2) Continued operation of the facility will provide adequate protection for the public health and safety, taking into account the health and

safety problems associated with production, storage, transportation, reprocessing, if any, and management or disposal of all nuclear fuel required for the plant and all nuclear wastes produced by the plant;

(3) Continued operation of the facility will not tend to foreclose, now or in the future, implementation of alternatives to the operation of this facility or to the design, construction or operation of other facilities which may be considered following completion of the review required by 10 CFR Section — ; and

(4) Continued operation of the facility will not tend to irretrievably commit resources to the production of nuclear fuel or the storage, reprocessing, if any, management or disposal of any nuclear wastes.

Facilities which received construction permits or LWA's prior to July 21, 1976:

NRC will order suspension of the LWA or the construction permit unless the licensee can establish that:

(1) Continued construction of the plant is essential to maintain a reliable supply of energy to the reliability region of which the plant is a part, taking into account alternative available sources of supply (including purchase power), historical reserve requirements and available interconnections for transmitting power;

(2) Continued construction will not tend to foreclose, now or in the future, implementation of alternatives to the design, construction or operation of this or other facilities which alternatives may be considered following completion of the review required by 10 CFR — ; and

(3) Continued construction will not tend to irretrievably commit resources to the facility.

As noted in the text immediately following this note, we believe the appropriate time for NRC consideration of *sua sponte*, across-the-board initiation of show cause proceedings to be when it has received from its staff its revised and documented assessment of the reprocessing and waste management issues. While the issues of reprocessing and waste management fully warrant serious and timely attention, no information now at hand calls for so drastic a step in the brief period before this analysis will be available. Also, while the individual factors NRDC suggests are among those relevant to be addressed in seeking a show cause order or in any show cause proceeding, the Commission cannot accept the suggestion that these factors are cumulative and must each be satisfied; its own approved prior practice and established judicial precedent permit balancing of these factors to determine where the equities of each particular case lie.

In adopting this approach, one inconsistent with the NRDC petition, the Commission is aware that neither NRDC nor other concerned parties have been formally heard. In commenting on the NRDC petition, any party interested to do so (including NRDC) may file comments addressed to the point.

Finally, even if no request for suspension or modification of an LWA, CP, or OL is received, the Commission will nevertheless determine whether it should *sua sponte* initiate show cause proceedings based upon information the Commission receives in the revised environmental survey. As noted earlier, this information should be in hand by September 30. The Commission's determination whether or not to reopen all licenses will then be issued.

FOR THE NUCLEAR
REGULATORY COMMISSION

SAMUEL J. CHILK
Secretary of the Commission

Dated at Washington, D.C.
this 13th day of August, 1976.

STATUTES AND REGULATIONS INVOLVED

Administrative Procedure Act, 5 U.S.C. § 553

(a) This section applies, according to the provisions thereof, except to the extent that there is involved —

(1) a military or foreign affairs function of the United States; or

(2) a matter relating to agency management or personnel or to public property, loans, grants, benefits, or contracts.

(b) General notice of proposed rule making shall be published in the Federal Register, unless persons subject thereto are named and either personally served or otherwise have actual notice thereof in accordance with law. The notice shall include —

(1) a statement of the time, place, and nature of public rule making proceedings;

(2) reference to the legal authority under which the rule is proposed; and

(3) either the terms or substance of the proposed rule or a description of the subjects and issues involved.

Except when notice or hearing is required by statute, this subsection does not apply —

(A) to interpretative rules, general statements of policy, or rules of agency organization, procedure, or practice; or

(B) when the agency for good cause finds (and incorporates the finding and a brief statement of reasons therefor in the rules issued) that notice and public procedure thereon are impracticable, unnecessary, or contrary to the public interest.

(c) After notice required by this section, the agency shall give interested persons an opportunity to participate in the rule making through submission of written data, views, or arguments with or without opportunity for oral presentation. After consideration of the relevant matter presented,

the agency shall incorporate in the rules adopted a concise general statement of their basis and purpose. When rules are required by statute to be made on the record after opportunity for an agency hearing, sections 556 and 557 of this title apply instead of this subsection.

(d) The required publication or services of a substantive rule shall be made not less than 30 days before its effective date, except —

(1) a substantive rule which grants or recognizes an exemption or relieves a restriction;

(2) interpretative rules and statements of policy; or

(3) as otherwise provided by the agency for good cause found and published with the rule.

(e) Each agency shall give an interested person the right to petition for the issuance, amendment, or repeal of a rule. Pub.L. 89-554, Sept. 6, 1966, 80 Stat. 383.

"CHAPTER 1. DECLARATION, FINDINGS, AND PURPOSE

Declaration. 42 U.S.C. sec. 2011.

"SECTION 1. DECLARATION. — Atomic energy is capable of application for peaceful as well as military purposes. It is therefore declared to be the policy of the United States that —

"a. the development, use, and control of atomic energy shall be directed so as to make the maximum contribution to the general welfare, subject at all times to the paramount objective of making the maximum contribution to the common defense and security; and

"b. the development, use, and control of atomic energy shall be directed so as to promote world peace, improve the general welfare, increase the standard of living, and strengthen free competition in private enterprise.

Findings. 42 U.S.C. sec. 2012.

"SEC. 2. FINDINGS. — The Congress of the United States hereby makes the following findings concerning the development, use, and control of atomic energy:

"a. The development, utilization, and control of atomic energy for military and for all other purposes are vital to the common defense and security.

"c. The processing and utilization of source, byproduct, and special nuclear material affect interstate and foreign commerce and must be regulated in the national interest.

"d. The processing and utilization of source, byproduct, and special nuclear material must be regulated in the national interest and in order

to provide for the common defense and security and to protect the health and safety of the public.

"e. Source and special nuclear material, production facilities, and utilization facilities are affected with the public interest, and regulation by the United States of the production and utilization of atomic energy and of the facilities used in connection therewith is necessary in the national interest to assure the common defense and security and to protect the health and safety of the public.

"f. The necessity for protection against possible interstate damage occurring from the operation of facilities for the production or utilization of source or special nuclear material places the operation of those facilities in interstate commerce for the purposes of this Act.

"g. Funds of the United States may be provided for the development and use of atomic energy under conditions which will provide for the common defense and security and promote the general welfare.

"i. In order to protect the public and to encourage the development of the atomic energy industry, in the interest of the general welfare and of the common defense and security, the United States may make funds available for a portion of the damages suffered by the public from nuclear incidents, and may limit the liability of those persons liable for such losses.

Purpose.
42 U.S.C.
sec. 2013.

"SEC. 3. PURPOSE. — It is the purpose of this Act to effectuate the policies set forth above by providing for —

"a. a program of conducting, assisting, and fostering research and development in order to encourage maximum scientific and industrial progress;

"b. a program for the dissemination of unclassified scientific and technical information and for the control, dissemination, and declassification of Restricted Data, subject to appropriate safeguards, so as to encourage scientific and industrial progress;

"c. a program for Government control of the possession, use, and production of atomic energy and special nuclear material, whether owned by the Government or others, so directed as to make the maximum contribution to the common defense and security and the national welfare, and to provide continued assurance of the Government's ability to enter into and enforce agreements with nations or groups of nations for the control of special nuclear materials and atomic weapons.

"d. a program to encourage widespread participation in the development and utilization of atomic energy for peaceful purposes to the maximum extent consistent with the common defense and security and with the health and safety of the public;

"e. a program of international cooperation to promote the common defense and security and to make available to cooperating nations the benefits of peaceful applications of atomic energy as widely as expanding technology and considerations of the common defense and security will permit; and

"f. a program of administration which will be consistent with the foregoing policies and programs, with international arrangements, and with agreements for cooperation, which will enable the Congress to be currently informed so as to take further legislative action as may be appropriate.

Definitions. 42 U.S.C. sec. 2014.

"CHAPTER 2. DEFINITIONS

"SEC. 11. DEFINITIONS. — The intent of Congress in the definitions as given in this section should be construed from the words or phrases used in the definitions. As used in this Act:

Agency of the U.S.

"a. The term 'agency of the United States' means the executive branch of the United States, or any Government agency, or the legislative branch of the United States, or any agency, committee, commission, office, or other establishment in the legislative branch, or the judicial branch of the United States, or any office, agency, committee, commission, or other establishment in the judicial branch.

Agreement for cooperation.

"b. The term 'agreement for cooperation' means any agreement with another nation or regional defense organization authorized or permitted by sections 54, 57, 64, 82, 91 c., 103, 104, or 144, and made pursuant to section 123.

Atomic energy.

"c. The term 'atomic energy' means all forms of energy released in the course of nuclear fission or nuclear transformation.

Atomic weapon.

"d. The term 'atomic weapon' means any device utilizing atomic energy, exclusive of the means for transporting or propelling the device

(where such means is a separable and divisible part of the device), the principal purpose of which is for use as, or for development of, a weapon, a weapon prototype, or a weapon test device.

Byproduct materials.

"e. The term 'byproduct material' means any radioactive material (except special nuclear material) yielded in or made radioactive by exposure to the radiation incident to the process of producing or utilizing special nuclear material.

Commission.

"f. The term 'Commission' means the Atomic Energy Commission.

Common defense and security.

"g. The term 'common defense and security' means the common defense and security of the United States.

Defense information.

"h. The term 'defense information' means any information in any category determined by any Government agency authorized to classify information, as being information respecting, relating to, or affecting the national defense.

Design.

"i. The term 'design' means (1) specifications, plans, drawings, blueprints, and other items of like nature; (2) the information contained therein; or (3) the research and development data pertinent to the information contained therein.

Extraordinary nuclear occurrence.

"j. The term 'extraordinary nuclear occurrence' means any event causing a discharge or dispersal of source, special nuclear, or byproduct material from its intended place of confinement in amounts offsite, or causing radiation levels offsite, which the Commission determines to be substantial, and which the Commission determines has resulted or will probably result

in substantial damages to persons offsite or property offsite. Any determination by the Commission that such an event has, or has not, occurred shall be final and conclusive, and no other official or any court shall have power or jurisdiction to review any such determination. The Commission shall establish criteria in writing setting forth the basis upon which such determination shall be made. As used in this subsection, 'offsite' means away from 'the location' or 'the contract location' as defined in the applicable Commission indemnity agreement, entered into pursuant to section 170.

Financial protection.

"k. The term 'financial protection' means the ability to respond in damages for public liability and to meet the costs of investigating and defending claims and settling suits for such damages.

Government agency.

"l. The term 'Government agency' means any executive department, commission, independent establishment, corporation, wholly or partly owned by the United States of America which is an instrumentality of the United States, or any board, bureau, division, service, office, officer, authority, administration, or other establishment in the executive branch of the Government.

Indemnitor.

"m. The term 'indemnitor' means (1) any insurer with respect to his obligations under a policy of insurance furnished as proof of financial protection; (2) any licensee, contractor or other person who is obligated under any other form of financial protection, with respect to such obligations; and (3) the Commission with

respect to any obligation undertaken by it in an indemnity agreement entered into pursuant to section 170.

International arrangement.

"n. The term 'international arrangement' means any international agreement hereafter approved by the Congress or any treaty during the time such agreement or treaty is in full force and effect, but does not include any agreement for cooperation.

Joint Committee.

"o. The term 'Joint Committee' means the Joint Committee on Atomic Energy.

Licensed activity.

"p. The term 'licensed activity' means an activity licensed pursuant to this Act and covered by the provisions of section 170a.

Nuclear incident.

"q. The term 'nuclear incident' means any occurrence, including an extraordinary nuclear occurrence, within the United States causing, within or outside the United States, bodily injury, sickness, disease, or death, or loss of or damage to property, or loss of use of property, arising out of or resulting from the radioactive, toxic, explosive, or other hazardous properties of source, special nuclear, or byproduct material: *Provided, however,* That as the term is used in subsection 170 l., it shall include any such occurrence outside of the United States: *And provided further,* That as the term is used in section 170d., it shall include any such occurrence outside of the United States if such occurrence involves a facility or device owned by, and used by or under contract with, the United States.

Operator.

"r. The term 'operator' means any individual who manipulates the controls of a utilization or production facility.

Person.

"s. The term 'person' means (1) any individual, corporation, partnership, firm, association, trust, estate, public or private institution, group, Government agency other than the Commission, any State or any political subdivision of, or any politicai entity within a State, any foreign government or nation or any political subdivision of any such government or nation, or other entity; and (2) any legal successor, representative, agent, or agency of the foregoing.

Person indemnified.

"t. The term 'person indemnified' means (1) with respect to a nuclear incident occurring within the United States and with respect to any nuclear incident in connection with the design, development, construction, operation, repair, maintenance, or use of the nuclear ship Savannah, the person with whom an indemnity agreement is executed and any other person who may be liable for public liability; or (2) with respect to any other nuclear incident occurring outside the United States, the person with whom an indemnity agreement is executed and any other person who may be liable for public liability by reason of his activities under any contract with the Commission or any project to which indemnification under the provisions of section 170d. has been extended or under any subcontract, purchase order or other agreement, of any tier, under any such contract or project.

Produce.

"u. The term 'produce', when used in relation to special nuclear material, means (1) to manufacture, make, produce, or refine special nuclear material; (2) to separate special nuclear material from other substances in which such material may be contained; or (3) to make or to produce new special nuclear material.

Production facility.

"v. The term 'production facility' means (1) any equipment or device determined by rule of the Commission to be capable of the production of special nuclear material in such quantity as to be of significance to the common defense and security, or in such manner as to affect the health and safety of the public; or (2) any important component part especially designed for such equipment or device as determined by the Commission.

Public liability.

"w. The term 'public liability' means any legal liability arising out of or resulting from a nuclear incident, except: (i) claims under State or Federal workmen's compensation acts of employees of persons indemnified who are employed at the site of and in connection with the activity where the nuclear incident occurs; (ii) claims arising out of an act of war; and (iii) whenever used in subsections 170 a., c., and k., claims for loss of, or damage to, or loss of use of property which is located at the site of and used in connection with the licensed activity where the nuclear incident occurs. 'Public liability' also includes damage to property of persons indemnified: *Provided,* That such property is covered under the terms of the financial protection required, except property which is located at the site of and used in connection with the activity where the nuclear incident occurs.

Research and development.

"x. The term 'research and development' means (1) theoretical analysis, exploration, or experimentation; or (2) the extension of inves-

tigative findings and theories of a scientific or technical nature into practical application for experimental and demonstration purposes, including the experimental production and testing of models, devices, equipment, materials, and processes.

Restricted Data.

"y. The term 'Restricted Data' means all data concerning (1) design, manufacture, or utilization of atomic weapons; (2) the production of special nuclear material; or (3) the use of special nuclear material in the production of energy, but shall not include data declassified or removed from the Restricted Data category pursuant to section 142.

Source material.

"z. The term 'source material' means (1) uranium, thorium, or any other material which is determined by the Commission pursuant to the provisions of section 61 to be source material; or (2) ores containing one or more of the foregoing materials, in such concentration as the Commission may by regulation determine from time to time.

Special nuclear material.

"aa. The term 'special nuclear material' means (1) plutonium, uranium enriched in the isotope 233 or in the isotope 235, and any other material which the Commission, pursuant to the provisions of section 51, determines to be special nuclear material, but does not include source material; or (2) any material artificially enriched by any of the foregoing, but does not include source material.

United States.

"bb. The term 'United States' when used in a geographical sense includes all Territories and possessions of the United States, the Canal Zone and Puerto Rico.

Utilization facility.

"cc. The term 'utilization facility' means (1) any equipment or device, except an atomic weapon, determined by rule of the Commission to be capable of making use of special nuclear material in such quantity as to be of significance to the common defense and security, or in such manner as to affect the health and safety of the public, or peculiarly adapted for making use of atomic energy in such quantity as to be of significance to the common defense and security, or in such manner as to affect the health and safety of the public; or (2) any important component part especially designed for such equipment or device as determined by the Commission.

"CHAPTER 10.

ATOMIC ENERGY LICENSES

License required. 42 U.S.C. sec. 2131.

"SEC. 101. LICENSE REQUIRED. — It shall be unlawful, except as provided in section 91, for any person within the United States to transfer or receive in interstate commerce, manufacture, produce, transfer, acquire, possess, use, import, or export any utilization or production facility except under and in accordance with a license issued by the Commission pursuant to section 103 or 104.

42 U.S.C. sec. 2132.

"SEC. 102. UTILIZATION AND PRODUCTION FACILITIES FOR INDUSTRIAL OR COMMERCIAL PURPOSES. —

"a. Except as provided in subsections b. and c., or otherwise specifically authorized by law, any license hereafter issued for a utilization or

production facility for industrial or commercial purposes shall be issued pursuant to section 103.

"b. Any license hereafter issued for a utilization or production facility for industrial or commercial purposes, the construction or operation of which was licensed pursuant to subsection 104 b. prior to enactment into law of this subsection, shall be issued under subsection 104 b.

"c. Any license for a utilization or production facility for industrial or commercial purposes contructed or operated under an arrangement with the Commission entered into under the Cooperative Power Reactor Demonstration Program shall, except as otherwise specifically required by applicable law, be issued under subsection 104 b.

Commercial licenses. 42 U.S.C. sec. 2133.

"SEC. 103. COMMERCIAL LICENSES. —

"a. The Commission is authorized to issue licenses to persons applying therefore to transfer or receive in interstate commerce, manufacture, produce, transfer, acquire, possess, use, import, or export under the terms of an agreement for cooperation arranged pursuant to section 123, utilization or production facilities for industrial or commercial purposes. Such licenses shall be issued in accordance with the provisions of chapter 16 and subject to such conditions as the Commission may by rule or regulation establish to effectuate the purposes and provisions of this Act.

"b. The Commission shall issue such licenses on a non-exclusive basis to persons applying therefor (1) whose proposed activities will

serve a useful purpose proportionate to the quantities of special nuclear material or source material to be utilized; (2) who are equipped to observe and who agree to observe such safety standards to protect health and to minimize danger to life or property as the Commission may by rule establish; and (3) who agree to make available to the Commission such technical information and data concerning activities under such licenses as the Commission may determine necessary to promote the common defense and security and to protect the health and safety of the public. All such information may be used by the Commission only for the purposes of the common defense and security and to protect the health and safety of the public.

"c. Each such license shall be issued for a specified period, as determined by the Commission, depending on the type of activity to be licensed, but not exceeding forty years, and may be renewed upon the expiration of such period.

"d. No license under this section may be given to any person for activities which are not under or within the jurisdiction of the United States, except for the export of production or utilization facilities under terms of an agreement for cooperation arranged pursuant to section 123, or except under the provisions of section 109. No license may be issued to an alien or any corporation or other entity if the Commission knows or has reason to believe it is owned, controlled, or dominated by an alien, a foreign corporation, or a foreign government. In any event, no license may be issued to any person

within the United States if, in the opinion of the Commission, the issuance of a license to such person would be inimical to the common defense and security or to the health and safety of the public.

Medical therapy and research and development. 42 U.S.C. sec. 2134.

"SEC. 104. MEDICAL THERAPY AND RESEARCH AND DEVELOPMENT. —

"a. The Commission is authorized to issue licenses to persons applying therefor for utilization facilities for use in medical therapy. In issuing such licenses the Commission is directed to permit the widest amount of effective medical therapy possible with the amount of special nuclear material available for such purposes and to impose the minimum amount of regulation consistent with its obligations under this Act to promote the common defense and security and to protect the health and safety of the public.

"b. As provided for in subsection 102b. or 102c., or where specifically authorized by law, the Commission is authorized to issue licenses under this subsection to persons applying therefor for utilization and production facilities for industrial and commercial purposes. In issuing licenses under this subsection, the Commission shall impose the minimum amount of such regulations and terms of license as will permit the Commission to fulfill its obligations under this Act.

"c. The Commission is authorized to issue licenses to persons applying therefor for utiliza-

tion and production facilities useful in the conduct of research and development activities of the types specified in section 31 and which are not facilities of the type specified in subsection 104b. The Commission is directed to impose only such minimum amount of regulation of the licensee as the Commission finds will permit the Commission to fulfill its obligations under this Act to promote the common defense and security and to protect the health and safety of the public and will permit the conduct of widespread and diverse research and development.

"d. No license under this section may be given to any person for activities which are not under or within the jurisdiction of the United States, except for the export of production or utilization facilities under terms of an agreement for cooperation arranged pursuant to section 123 or except under the provisions of section 109. No license may be issued to any corporation or other entity if the Commission knows or has reason to believe it is owned, controlled, or dominated by an alien, a foreign corporation, or a foreign government. In any event, no license may be issued to any person within the United States if, in the opinion of the Commission, the issuance of a license to such person would be inimical to the common defense and security or to the health and safety of the public.

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Classes of facilities. 42 U.S.C. sec. 2136.

"SEC. 106. CLASSES OF FACILITIES. — The Commission may —

"a. group the facilities licensed either under section 103 or under section 104 into classes which may include either production or utilization facilities or both, upon the basis of the similarity of operating and technical characteristics of the facilities;

"b. define the various activities to be carried on at each such class of facility; and

"c. designate the amounts of special nuclear material available for use by each such facility.

Operators' licenses. 42 U.S.C. sec. 2137.

"SEC. 107. OPERATORS' LICENSES. — The Commission shall —

"a. prescribe uniform conditions for licensing individuals as operators of any of the various classes of production and utilization facilities licensed in this Act;

"b. determine the qualifications of such individuals;

"c. issue licenses to such individuals in such form as the Commission may prescribe; and

"d. suspend such licenses for violations of any provision of this Act or any rule or regula-

tion issued thereunder whenever the Commission deems such action desirable.

War or national emergency. 42 U.S.C. sec. 2138.

"SEC. 108. WAR OR NATIONAL EMERGENCY. — Whenever the Congress declares that a state of war or national emergency exists, the Commission is authorized to suspend any licenses granted under this Act if in its judgment such action is necessary to the common defense and security. The Commmission is authorized during such period, if the Commission finds it necessary to the common defense and security, to order the recapture of any special nuclear material or to order the operation of any facility licensed under section 103 or 104, and is authorized to order the entry into any plant or facility in order to recapture such material, or to operate such facility. Just compensation shall be paid for any damages caused by the recapture of any special nuclear material or by the operation of any such facility.

Component parts of facilities. 42 U.S.C. sec. 2139.

"SEC. 109. COMPONENT PARTS OF FACILITIES. — With respect to those utilization and production facilities which are so determined by the Commission pursuant to subsection 11 v. (2) or 11 cc. the Commission may (a) issue general licenses for activities required to be licensed under section 101, if the Commission determines in writing that such general licensing will not constitute an unreasonable risk to the com-

mon defense and security, and (b) issue licenses for the export of such facilities, if the Commission determines in writing that each export will not constitute an unreasonable risk to the common defense and security.

Exclusions. 42 U.S.C. sec. 2140.

"SEC. 110. EXCLUSIONS. — Nothing in this chapter shall be deemed —

"a. to require a license for (1) the processing, fabricating, or refining of special nuclear material, or the separation of special nuclear material, or the separation of special nuclear material from other substances, under contract with and for the account of the Commission; or (2) the construction or operation of facilities under contract with and for the account of the Commission; or

"b. to require a license for the manufacture, production, or acquisition by the Department of Defense of any utilization facility authorized pursuant to section 91, or for the use of such facility by the Department of Defense or a contractor thereof.

"CHAPTER 14. GENERAL AUTHORITY

General provisions. 42 U.S.C. sec. 2201.

"SEC. 161. GENERAL PROVISIONS. — In the performance of its functions the Commission is authorized to —

"a. establish advisory boards to advise with and make recommendations to the Commission on legislation, policies, administration, research, and other matters, provided that the Commission issues regulations setting forth the scope, procedure, and limitations of the authority of each such board;

"b. establish by rule, regulation, or order, such standards and instructions to govern the possession and use of special nuclear material, source material, and byproduct material as the Commission may deem necessary or desirable to promote the common defense and security or to protect health or to minimize danger to life or property;

"c. make such studies and investigations, obtain such information, and hold such meetings or hearings as the Commission may deem necessary or proper to assist it in exercising any authority provided in this Act, or in the administration or enforcement of this Act, or any regulations or orders issued thereunder. For such purposes the Commission is authorized to administer oaths and affirmations, and by subpena to require any person to appear and testify, or to appear and produce documents, or both, at any designated place. Witnesses subpenaed under this subsection shall be paid the same fees and mileage as are paid witnesses in the district courts of the United States; 27 Stat. 443, 49 U.S.C. 46.

"d. appoint and fix the compensation of such officers and employees as may be necessary to carry out the functions of the Commission. Such officers and employees shall be appointed in accordance with the civil-service laws and their compensation fixed in accordance with the Classification Act of 1949, as amended, except that, to the extent the Commission deems such action 80 Stat. 443, 5 U.S.C. 5101.

necessary to the discharge of its responsibilities, personnel may be employed and their compensation fixed without regard to such laws: *Provided, however,* That no officer or employee (except such officers and employees whose compensation is fixed by law, and scientific and technical personnel up to a limit of the highest rate of grade 18 of the General Schedule of the Classification Act of 1949, as amended) whose position would be subject to the Classification Act of 1949, as amended, if such Act were applicable to such position, shall be paid a salary at a rate in excess of the rate payable under such Act for positions of equivalent difficulty or responsibility. Such rates of compensation may be adopted by the Commission as may be authorized by the Classification Act of 1949, as amended, as of the same date such rates are authorized for positions subject to such Act. The Commission shall make adequate provision for administrative review of any determination to dismiss any employee;

"e. acquire such material, property, equipment, and facilities, establish or construct such buildings and facilities, and modify such buildings and facilities from time to time, as it may deem necessary, and construct, acquire, provide, or arrange for such facilities and services (at project sites where such facilities and services are not available) for the housing, health, safety, welfare, and recreation of personnel employed by the Commission as it may deem necessary, subject to the provisions of section 174: *Provided, however,* That in the communities owned by the Commission, the Commission is

authorized to grant privileges, leases and permits upon adjusted terms which (at the time of the initial grant of any privilege, grant, lease, or permit, or renewal thereof, or in order to avoid inequities or undue hardship prior to the sale by the United States of property affected by such grant) are fair and reasonable to responsible persons to operate commercial businesses without advertising and without advertising (sic) and without securing competitive bids, but taking into consideration, in addition to the price, and among other things (1) the quality and type of services required by the residents of the community, (2) the experience of each concession applicant in the community and its surrounding area, (3) the ability of the concession applicant to meet the needs of the community, and (4) the contribution the concession applicant has made or will make to the other activities and general welfare of the community;

"f. with the consent of the agency concerned, utilize or employ the services of personnel of any Government agency or any State or local government, or voluntary or uncompensated personnel, to perform such functions on its behalf as may appear desirable;

"g. acquire, purchase, lease, and hold real and personal property, including patents, as agents of and on behalf of the United States subject to the provisions of section 174, and to sell, lease, grant, and dispose of such real and personal property as provided in this Act;

"h. consider in a single application one or more of the activities for which a license is required by this Act, combine in a single license

one or more of such activities, and permit the applicant or licensee to incorporate by reference pertinent information already filed with the Commission;

"i. prescribe such regulations or orders as it may deem necessary (1) to protect Restricted Data received by any person in connection with any activity authorized pursuant to this Act, (2) to guard against the loss or diversion of any special nuclear material acquired by any person pursuant to section 53 or produced by any person in connection with any activity authorized pursuant to this Act, to prevent any use or disposition thereof which the Commission may determine to be inimical to the common defense and security, including regulations or orders designating activities, involving quantities of special nuclear material which in the opinion of the Commission are important to the common defense and security, that may be conducted only by persons whose character, associations, and loyalty shall have been investigated under standards and specifications established by the Commission and as to whom the Commission shall have determined that permitting each such person to conduct the activity will not be inimical to the common defense and security, and (3) to govern any activity authorized pursuant to this Act, including standards and restrictions governing the design, location, and operation of facilities used in the conduct of such activity, in order to protect health and to minimize danger to life or property;".

63 Stat. 377, 40 U.S.C. 471 note, 488.

"j. without regard to the provisions of the Federal Property and Administrative Services

Act of 1949, as amended, except section 207 of that Act, or any other law, make such disposition as it may deem desirable of (1) radioactive materials, and (2) any other property, the special disposition of which is, in the opinion of the Commission, in the interest of the national security: *Provided, however,* That the property furnished to licensees in accordance with the provisions of subsection 161 m. shall not be deemed to be properly disposed of by the Commission pursuant to this subsection;

"k. authorize such of its members, officers, and employees as it deems necessary in the interest of the common defense and security to carry firearms while in the discharge of their official duties. The Commission may also authorize such of those employees of its contractors engaged in the protection of property owned by the United States and located at facilities owned by or contracted to the United States as it deems necessary in the interests of the common defense and security to carry firearms while in the discharge of their official duties;

"m. enter into agreements with persons licensed under Section 103, 104, 53 a. (4), or 63 a. (4) for such periods of time as the Commission may deem necessary or desirable (1) to provide for the processing, fabricating, separating, or refining in facilities owned by the Commission of source, byproduct, or other material or special nuclear material owned by or made available to such licensees and which is utilized or produced in the conduct of the licensed activity, and (2) to sell, lease, or otherwise make available to such licensees such quantities of source

or byproduct material, and other material not defined as special nuclear material pursuant to this Act, as may be necessary for the conduct of the licensed activity: *Provided, however,* That any such agreement may be canceled by the licensee at any time upon payment of such reasonable cancellation charges as may be agreed upon by the licensee and the Commission: *And provided further,* That the Commission shall establish prices to be paid by licensees for material or services to be furnished by the Commission pursuant to this subsection, which prices shall be established on such a nondiscriminatory basis as, in the opinion of the Commission, will provide reasonable compensation to the Government for such material or services and will not discourage the development of sources of supply independent of the Commission;

"n. delegate to the General Manager or other officers of the Commission any of those functions assigned to it under this Act except those specified in sections 51, 57 b., 61, 108, 123, 145b. (with respect to the determination of those persons to whom the Commission may reveal Restricted Data in the national interest), 145 f., and 161 a.;

"o. require by rule, regulation, or order, such reports, and the keeping of such records with respect to, and to provide for such inspections of, activities and studies of types specified in section 31 and of activities under licenses issued pursuant to sections 53, 63, 81, 103, and 104, as may be necessary to effectuate the purposes of this Act, including section 105; and

"p. make, promulgate, issue, rescind, and amend such rules and regulations as may be necessary to carry out the purposes of this Act.

Easements for rights-of-way.

"q. The Commission is authorized and empowered, under such terms and conditions as are deemed advisable by it, to grant easements for rights-of-way over, across, in, and upon acquired lands under its jurisdiction and control, and public lands permanently withdrawn or reserved for the use of the Commission, to any State, political subdivision thereof, or municipality, or to any individual, partnership, or corporation of any State, Territory, or possession of the United States, for (a) railroad tracks; (b) oil pipe lines; (c) substations for electric power transmission lines, telephone lines, and telegraph lines, and pumping stations for gas, water, sewer, and oil pipe lines; (d) canals; (e) ditches; (f) flumes; (g) tunnels; (h) dams and reservoirs in connection with fish and wildlife programs, fish hatcheries, and other fish-cultural improvements; (i) roads and streets; and (j) for any other purpose or purposes deemed advisable by the Commission: *Provided,* That such rights-of-way shall be granted only upon a finding by the Commission that the same will not be incompatible with the public interest: *Provided further,* That such rights-of-way shall not include any more land than is reasonably necessary for the purpose for which granted: *And provided further,* That all or any part of such rights-of-way may be annulled and forfeited by the Commission for failure to comply with the terms and conditions of any grant hereunder or for nonuse for a

period of two consecutive years or abandonment of rights granted under authority hereof. Copies of all instruments granting easements over public lands pursuant to this section shall be furnished to the Secretary of the Interior.

"r. Under such regulations and for such periods and at such prices the Commission may prescribe, the Commission may sell or contract to sell to purchasers within Commission-owned communities or in the immediate vicinity of the Commission community, as the case may be, any of the following utilities and related services, if it is determined that they are not available from another local source and that the sale is in the interest of the national defense or in the public interest:

"(1) Electric power.
"(2) Steam.
"(3) Compressed air.
"(4) Water.
"(5) Sewage and garbage disposal.
"(6) Natural, manufactured, or mixed gas.
"(7) Ice.
"(8) Mechanical refrigeration.
"(9) Telephone service.

"Proceeds of sales under this subsection shall be credited to the appropriation currently available for the supply of that utility or service. To meet local needs the Commission may make minor expansions and extensions of any distributing system or facility within or in the immediate vicinity of a Commission-owned community through which a utility or service is furnished under this subsection.

Succession of authority.

"s. establish a plan for a succession of authority which will assure the continuity of direction of the Commission's operations in the event of a national disaster due to enemy activity. Notwithstanding any other provision of this Act, the person or persons succeeding to command in the event of disaster in accordance with the plan established pursuant to this subsection shall be vested with all of the authority of the Commission: *Provided,* That any such succession to authority, and vesting of authority shall be effective only in the event and as long as a quorum of three or more members of the Commission is unable to convene and exercise direction during the disaster period: *Provided further,* That the disaster period includes the period when attack on the United States is imminent and the post-attack period necessary to reestablish normal lines of command;

"t. enter into contracts for the processing, fabricating, separating, or refining in facilities owned by the Commission of source, byproduct or other material, or special nuclear material, in accordance with and within the period of an agreement for cooperation while comparable services are available to persons licensed under section 103 or 104: *Provided,* That the prices for services under such contracts shall be no less than the prices currently charged by the Commission pursuant to section 161m.;

Processing contracts.

"u. (1) enter into contracts for such periods of time as the Commission may deem necessary or desirable, but not to exceed five years from the date of execution of the contract, for the

Long term contract authority.

purchase or acquisition of reactor services or services related to or required by the operation of reactors;

"(2) (A) enter into contracts for such periods of time as the Commission may deem necessary or desirable for the purchase or acquisition of any supplies, equipment, materials, or services required by the Commission whenever the Commission determines that: (i) it is advantageous to the Government to make such purchase or acquisition from commercial sources; (ii) the furnishing of such supplies, equipment, materials, or services will require the construction or acquisition of special facilities by the vendors or suppliers thereof; (iii) the amortization chargeable to the Commission constitutes an appreciable portion of the cost of contract performance, excluding cost of materials; and (iv) the contract for such period is more advantageous to the Government than a similar contract not executed under the authority of this subsection. Such contracts shall be entered into for periods not to exceed five years each from the date of initial delivery of such supplies, equipment, materials, or services or ten years from the date of execution of the contracts excluding periods of renewal under option.

"(B) In entering into such contracts the Commission shall be guided by the following principles: (i) the percentage of the total cost of special facilities devoted to contract performance and chargeable to the Commission should not exceed the ratio between the period of contract deliveries and the anticipated useful life of such

special facilities; (ii) the desirability of obtaining options to renew the contract for reasonable periods at prices not to include charges for special facilities already amortized; and (iii) the desirability of reserving in the Commission the right to take title to the special facilities under appropriate circumstances; and

"(3) include in contracts made under this subsection provisions which limit the obligation of funds to estimated annual deliveries and services and the unamortized balance of such amounts due for special facilities as the parties shall agree is chargeable to the performance of the contract. Any appropriation available at the time of termination or thereafter made available to the Commission for operating expenses shall be available for payment of such costs which may arise from termination as the contract may provide. The term 'special facilities' as used in this subsection means any land and any depreciable buildings, structures, utilities, machinery, equipment, and fixtures necessary for the production or furnishing of such supplies, equipment, materials, or services and not available to the vendors or suppliers for the performance of the contract.

"v. (A) enter into contracts with persons licensed under sections 53, 63, 103 or 104 for such periods of time as the Commission may deem necessary or desirable to provide, after December 31, 1968, for the producing or enriching of special nuclear material in facilities owned by the Commission; and

Contract authority.

"(B) enter into contracts to provide, after December 31, 1968, for the producing or enriching of special nuclear material in facilities owned by the Commission in accordance with and within the period of an agreement for cooperation arranged pursuant to section 123 while comparable services are made available pursuant to paragraph (A) of this subsection:

Provided, That (i) prices for services under paragraph (A) of this subsection shall be established on a nondiscriminatory basis; (ii) prices for services under paragraph (B) of this subsection shall be no less than prices under paragraph (A) of this subsection; and (iii) any prices established under this subsection shall be on a basis of recovery of the Government's costs over a reasonable period of time: *And provided further,* That the Commission, to the extent necessary to assure the maintenance of a viable domestic uranium industry, shall not offer such services for source or special nuclear materials of foreign origin intended for use in a utilization facility within or under the jurisdiction of the United States. The Commission shall establish criteria in writing setting forth the terms and conditions under which services provided under this subsection shall be made available including the extent to which such services will be made available for source or special nuclear material of foreign origin intended for use in a utilization facility within or under the jurisdiction of the United States: *Provided,* That before the Commission establishes such criteria, the proposed criteria shall be submitted to the Joint

Committee, and a period of forty-five days shall elapse while Congress is in session (in computing the forty-five days there shall be excluded the days in which either House is not in session because of adjournment for more than three days) unless the Joint Committee by resolution in writing waives the conditions of, or all or any portion of, such forty-five day period.

"w. prescribe and collect from any other Government agency, which applies for or is issued a license for a utilization facility designed to produce electrical or heat energy pursuant to section 103 or 104b, any fee, charge, or price which it may require, in accordance with the provisions of section 483a of title 31 of the United States Code or any other law, of applicants for, or holders of, such licenses.

"SEC. 162. CONTRACTS. — The President may, in advance, exempt any specific action of the Commission in a particular matter from the provisions of law relating to contracts whenever he determines that such action is essential in the interest of the common defense and security. Contracts. 42 U.S.C. sec. 2202.

"SEC. 163. ADVISORY COMMITTEES. — The members of the General Advisory Committee established pursuant to section 26 and the members of advisory boards established pursuant to section 161 a. may serve as such without regard to the provisions of sections 281, 283, or 284 of Title 18 of the United States Code, except insofar as such sections may prohibit any such member from receiving compensation from a Advisory committees. 42 U.S.C. sec. 2203. 62 Stat. 697.

source other than a nonprofit educational institution in respect of any particular matter which directly involves the Commission or in which the Commission is directly interested.

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"CHAPTER 16. JUDICIAL REVIEW AND ADMINISTRATIVE PROCEDURE

General.
60 Stat. 381-388, 5 U.S.C. 551-559. 42 U.S.C. sec. 2231.

"SEC. 181. GENERAL. — The provisions of the Administrative Procedure Act (Public Law 404, Seventy-ninth Congress, approved June 11, 1946) shall apply to all agency action taken under this Act, and the terms 'agency' and 'agency action' shall have the meaning specified in the Administration Procedure Act: *Provided, however,* That in the case of agency proceedings or actions which involve Restricted Data or defense information, the Commission shall provide by regulation for such parallel procedures as will effectively safeguard and prevent disclosure of Restricted Data or defense information to unauthorized persons with minimum impairment of the procedural rights which would be available if Restricted Data or defense information were not involved.

License applications. 42 U.S.C. sec. 2232.

"SEC. 182. LICENSE APPLICATIONS. —

"a. Each application for a license hereunder shall be in writing and shall specifically state

such information as the Commission, by rule or regulation, may determine to be necessary to decide such of the technical and financial qualifications of the applicant, the character of the applicant, the citizenship of the applicant, or any other qualifications of the applicant as the Commission may deem appropriate for the license. In connection with applications for licenses to operate production or utilization facilities, the applicant shall state such technical specifications, including information of the amount, kind, and source of special nuclear material required, the place of the use, the specific characteristics of the facility, and such other information as the Commission may, by rule or regulation, deem necessary in order to enable it to find that the utilization or production of special nuclear material will be in accord with the common defense and security and will provide adequate protection to the health and safety of the public. Such technical specifications shall be a part of any license issued. The Commission may at any time after the filing of the original application, and before the expiration of the license, require further written statements in order to enable the Commission to determine whether the application should be granted or denied or whether a license should be modified or revoked. All applications and statements shall be signed by the applicant or licensee. Applications for, and statements made in connection with, licenses under sections 103 and 104 shall be made under oath or affirmation. The Commission may require any other applications or statements to be made under oath or affirmation.

ACRS Report.

"b. The Advisory Committee on Reactor Safeguards shall review each application under section 103 or section 104 b. for a construction permit or an operating license for a facility, any application under section 104 c. for a construction permit or an operating license for a testing facility, any application under section 104 a. or c. specifically referred to it by the Commission, and any application for an amendment to a construction permit or an amendment to an operating license under section 103 or 104 a., b., or c. specifically referred to it by the Commission, and shall submit a report thereon which shall be made part of the record of the application and available to the public except to the extent that security classification prevents disclosure.

Commercial power.

"c. The Commission shall not issue any license under section 103 for a utilization or production facility for the generation of commercial power until it has given notice in writing to such regulatory agency as may have jurisdiction over the rates and services incident to the proposed activity; until it has published notice of the application in such trade or news publications as the Commission deems appropriate to give reasonable notice to municipalities, private utilities, public bodies, and cooperatives which might have a potential interest in such utilization or production facility; and until it has published notice of such application once each week for four consecutive weeks in the Federal Register, and until four weeks after the last notice.

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"d. The Commission, in issuing any license for a utilization or production facility for the generation of commercial power under section 103, shall give preferred consideration to applications for such facilities which will be located in high cost power areas in the United States if there are conflicting applications for a limited opportunity for such license. Where such conflicting applications resulting from limited opportunity for such license include those submitted by public or cooperative bodies such applications shall be given preferred consideration.

"SEC. 183. TERMS OF LICENSES. — Each license shall be in such form and contain such terms and conditions as the Commission may, by rule or regulation, prescribe to effectuate the provisions of this Act, including the following provisions:

Terms of licenses. 42 U.S.C. sec. 2233.

"b. No right to the special nuclear material shall be conferred by the license except as defined by the license.

"c. Neither the license nor any right under the license shall be assigned or otherwise transferred in violation of the provisions of this Act.

"d. Every license issued under this Act shall be subject to the right of recapture or control reserved by section 108, and to all of the other provisions of this Act, now or hereafter in effect and to all valid rules and regulations of the Commission.

Inalienability of licenses. 42 U.S.C. sec. 2234.

"SEC. 184. INALIENABILITY OF LICENSES.— No license granted hereunder and no right to utilize or produce special nuclear material granted hereby shall be transferred, assigned or in any manner disposed of, either voluntarily or involuntarily, directly or indirectly, through transfer of control of any license to any person, unless the Commission shall, after securing full information, find that the transfer is in accordance with the provisions of this Act, and shall give its consent in writing. The Commission may give such consent to the creation of a mortgage, pledge, or other lien upon any facility or special nuclear material, owned or thereafter acquired by a licensee, or upon any leasehold or other interest in such facility, and the rights of the creditors so secured may thereafter be enforced by any court subject to rules and regulations established by the Commission to protect public health and safety and promote the common defense and security.

Construction permits. 42 U.S.C. sec. 2235.

"SEC. 185. CONSTRUCTION PERMITS. — All applicants for licenses to construct or modify production or utilization facilities shall, if the application is otherwise acceptable to the Commission, be initially granted a construction permit. The construction permit shall state the earliest and latest dates for the completion of the construction or modification. Unless the construction or modification of the facility is completed by the completion date, the construction permit shall expire, and all rights thereunder be forfeited, unless upon good cause shown, the Commission extends the completion

date. Upon the completion of the construction or modification of the facility, upon the filing of any additional information needed to bring the original application up to date, and upon finding that the facility authorized has been constructed and will operate in conformity with the application as amended and in conformity with the provisions of this Act and of the rules and regulations of the Commission, and in the absence of any good cause being shown to the Commission why the granting of a license would not be in accordance with the provisions of this Act, the Commission shall thereupon issue a license to the applicant. For all other purposes of this Act, a construction permit is deemed to be a 'license'.

Revocation. 42 U.S.C. sec. 2236.

"SEC. 186. REVOCATION. —

"a. Any license may be revoked for any material false statement in the application or any statement of fact required under section 182, or because of conditions revealed by such application or statement of fact or any report, record, or inspection or other means which would warrant the Commission to refuse to grant a license on an original application, or for failure to construct or operate a facility in accordance with the terms of the construction permit or license or the technical specifications in the application, or for violation of, or failure to observe any of the terms and provisions of this Act or of any regulation of the Commission.

80 Stat. 388, 5 U.S.C. 588(b).

"b. The Commission shall follow the provisions of section 9(b) of the Administrative Procedure Act in revoking any license.

"c. Upon revocation of the license, the Commission may immediately retake possession of all special nuclear material held by the licensee. In cases found by the Commission to be of extreme importance to the national defense and security or to the health and safety of the public, the Commission may recapture any special nuclear material held by the licensee or may enter upon and operate the facility prior to any of the procedures provided under the Administrative Procedure Act. Just compensation shall be paid for the use of the facility.

5 U.S.C. 551.

Modification of license. 42 U.S.C. sec. 2237.

"SEC. 187. MODIFICATION OF LICENSE. — The terms and conditions of all licenses shall be subject to amendment, revision, or modification, by reason of amendments of this Act, or by reason of rules and regulations issued in accordance with the terms of this Act.

Continued operation of facilities. 42 U.S.C. sec. 2238.

"SEC. 188. CONTINUED OPERATION OF FACILITIES. — Whenever the Commission finds that the public convenience and necessity or the production program of the Commission requires continued operation of a production facility or utilization facility the license for which has been revoked pursuant to section 186, the Commission may, after consultation with the appropriate regulatory agency, State or Federal, having jurisdiction, order that possession be taken of and such facility be operated for such period of time as the public convenience and necessity or the production program of the Commission may, in the judgment of the Commission, require, or until a license for the operation of the facility

shall become effective. Just compensation shall be paid for the use of the facility.

Hearings and judicial review. 42 U.S.C. sec. 2239.

"SEC. 189. HEARINGS AND JUDICIAL REVIEW. —

"a. In any proceeding under this Act, for the granting, suspending, revoking, or amending of any license or construction permit, or application to transfer control, and in any proceeding for the issuance or modification of rules and regulations dealing with the activities of licensees, and in any proceeding for the payment of compensation, an award, or royalties under sections 153, 157, 186 c., or 188, the Commission shall grant a hearing upon the request of any person whose interest may be affected by the proceeding, and shall admit any such person as a party to such proceeding. The Commission shall hold a hearing after thirty days' notice and publication once in the Federal Register, on each application under section 103 or 104 b. for a construction permit for a facility, and on any application under section 104 c. for a construction permit for a testing facility. In cases where such a construction permit has been issued following the holding of such a hearing, the Commission may, in the absence of a request therefor by any person whose interest may be affected, issue an operating license or an amendment to a construction permit or an amendment to an operating license without a hearing, but upon thirty days' notice and publication once in the Federal Register of its intent to do so. The Commission may dispense with such thirty days' notice and publication with respect to any application for an amendment to a construction per-

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mit or an amendment to an operating license upon a determination by the Commission that the amendment involves no significant hazards consideration.

"b. Any final order entered in any proceeding of the kind specified in subsection a. above shall be subject to judicial review in the manner prescribed in the Act of December 29, 1950, as amended (ch. 1189, 64 Stat. 1129), and to the provisions of section 10 of the Administrative Procedure Act, as amended.

5 U.S.C. 701-706, 28 U.S.C. 2341-2352.

"SEC. 190. LICENSEE INCIDENT REPORTS. — No report by any licensee of any incident arising out of or in connection with a licensed activity made pursuant to any requirement of the Commission shall be admitted as evidence in any suit or action for damages growing out of any matter mentioned in such report.

42 U.S.C. sec. 2240.

"SEC. 191. ATOMIC SAFETY AND LICENSING BOARD. —

Atomic Safety and Licensing Board. 80 Stat. 386, 387, 5 U.S.C. 556, 557. 42 U.S.C. sec. 2241.

"a. Notwithstanding the provisions of sections 7(a) and 8(a) of the Administrative Procedure Act, the Commission is authorized to establish one or more atomic safety and licensing boards, each comprised of three members, one of whom shall be qualified in the conduct of administrative proceedings and two of whom shall have such technical or other qualifications as the Commission deems appropriate to the issues to be decided, to conduct such hearings as the Commission may direct and make such intermediate or final decisions as the Commission may authorize with respect to the granting, suspending, revoking or amending of any license or authorization under the provisions of this Act, any other provision of law, or any regulation of the Commission issued thereunder. The Commission may delegate to a board such other regulatory functions as the Commission deems appropriate. The Commission may appoint a panel of qualified persons from which board members may be selected.

"b. Board members may be appointed by the Commission from private life, or designated from the staff of the Commission or other Federal agency. Board members appointed from private life shall receive a per diem compensation for each day spent in meetings or conferences, and all members shall receive their necessary traveling or other expenses while engaged in the work of a board. The provisions of section 163 shall be applicable to board members appointed from private life.

"SEC. 192. TEMPORARY OPERATING LICENSE. —

Temporary licensing authority. 42 U.S.C. sec. 2242.

"a. In any proceeding upon an application for an operating license for a nuclear power reactor, in which a hearing is otherwise required pursuant to section 189 a., the applicant may petition the Commission for a temporary operating license authorizing operation of the facility pending final action by the Commission on the application. Such petition may be filed at any time after filing of: (1) the report of the Advisory Committee on Reactor Safeguards required by subsection 182 b.; (2) the safety

evaluation of the application by the Commission's regulatory staff; and (3) the regulatory staff's final detailed statement on the environmental impact of the facility prepared pursuant to section 102(2) (C) of the National Environmental Policy Act of 1969 (83 Stat. 853) or, in the case of an application for operating license filed on or before September 9, 1971, if the regulatory staff's final detailed statement required under section 102(2) (C) is not completed, the Commission must satisfy the applicable requirements of the National Environmental Policy Act prior to issuing any temporary operating license under this section 192. The petition shall be accompanied by an affidavit or affidavits setting forth the facts upon which the petitioner relies to justify issuance of the temporary operating license. Any party to the proceeding may file affidavits in support of, or opposition to, the petition within fourteen days after the filing of such petition, or within such additional time not to exceed ten days as may be fixed by the Commission. The Commission shall hold a hearing after ten days' notice and publication once in the Federal Register on any such petition and supporting material filed under this section and the decision of the Commission with respect to the issuance of a temporary operating license following such hearing, shall be on the basis of findings on the matters specified in subsection b. of this section. The hearing required by this section and the decision of the Commission on the petition shall be conducted with expedited procedures as the Commission

may by rule, regulation, or order deem appropriate for a full disclosure of material facts on all substantial issues raised in connection with the proposed temporary operating license.

"b. With respect to any petition filed pursuant to subsection a. of this section, the Commission shall issue a temporary operating license upon finding that:

"(1) the provisions of section 185 have been met with respect to the temporary operating license;

"(2) operation of the facility during the period of the temporary operating license in accordance with its terms and conditions will provide adequate protection of the environment during the period of the temporary operating license; and

"(3) operation of the facility in accordance with the terms and conditions of the temporary operating license is essential toward insuring that the power generating capacity of a utility system or power pool is at, or is restored to, the levels required to assure the adequacy and reliability of the power supply, taking into consideration factors which include, but need not be limited to, alternative available sources of supply, historical reserve requirements for the systems involved to function reliably, the possible endangerment to the public health and safety in the event of power shortages, and data from appropriate Federal and State governmental bodies which have official responsibility to assure an adequate and reliable power supply.

The temporary license shall contain such terms and conditions as the Commission may deem necessary, including the duration of the license and any provision for the extension thereof, and the requirement that the licensee not retire or dismantle any of its existing generating capacity on the ground of the availability of the capacity from the facility which is operating under the temporary license. Any decision or other document authorizing the issuance of any temporary license pursuant to this section shall recite with specificity the reasons justifying the issuance. The decision of the Commission with respect to the issuance of a temporary operating license shall be subject to judicial review pursuant to the Act of December 29, 1950, as amended (ch. 1189, 64 Stat. 1129).

"c. The hearing on the application for the final operating license otherwise required pursuant to section 189 a. shall be concluded as promptly as practicable. The Commission shall vacate the temporary operating license if it finds that the applicant is not prosecuting the application for the final operating license with due diligence. Issuance of a temporary operating license pursuant to subsection b. of this section shall be without prejudice to the position of any party to the proceeding in which a hearing is otherwise required pursuant to section 189 a.: and failure to assert any ground for denial or limitation of a temporary operating license shall not bar the assertion of such ground in connection with the issuance of a subsequent final operating license.

"d. The authority under this section shall expire on October 30, 1973.

"CHAPTER 17. JOINT COMMITTEE ON ATOMIC ENERGY

"SEC. 201. MEMBERSHIP.—There is hereby established a Joint Committee on Atomic Energy to be composed of nine Members of the Senate to be appointed by the President of the Senate, and nine Members of the House of Representatives to be appointed by the Speaker of the House of Representatives. In each instance not more than five Members shall be members of the same political party. Membership. 42 U.S.C. sec. 2251.

"SEC. 202. AUTHORITY AND DUTY.— Authority and duty. 42 U.S.C. sec. 2252.

"a. The Joint Committee shall make continuing studies of the activities of the Atomic Energy Commission and of problems relating to the development, use, and control of atomic energy. During the first ninety days of each session of the Congress, the Joint Committee may conduct hearings in either open or executive session for the purpose of receiving information concerning the development, growth, and state of the atomic energy industry. The Commission shall keep the Joint Committee fully and currently informed with respect to all of the Commission's activities. The Department of Defense shall keep the Joint Committee fully and currently informed with respect to all matters within the Department of Defense relating to the development, utilization, or application of atomic energy. Any Government agency shall Joint Committee on Atomic Energy hearings.

furnish any information requested by the Joint Committee with respect to the activities or responsibilities of that agency in the field of atomic energy. All bills, resolutions, and other matters in the Senate or the House of Representatives relating primarily to the Commission or to the development, use, or control of atomic energy shall be referred to the Joint Committee. The members of the Joint Committee who are Members of the Senate shall from time to time report to the Senate, and the members of the Joint Committee who are Members of the House of Representatives shall from time to time report to the House, by bill or otherwise, their recommendations with respect to matters within the jurisdiction of their respective Houses which are referred to the Joint Committee or otherwise within the jurisdiction of the Joint Committee.

"b. The members of the Joint Committee who are Members of the Senate and the members of the Joint Committee who are Members of the House of Representatives shall, on or before June 30 of each year, report to their respective Houses on the development, use, and control of nuclear energy for the common defenses and security and for peaceful purposes. Each report shall provide facts and information available to the Joint Committee concerning nuclear energy which will assist the appropriate committees of the Congress and individual members in the exercise of informed judgment on matters of weaponry; foreign policy; defense; international trade; and in respect to the expenditure and

appropriation of Government revenues. Each report shall be presented formally under circumstances which provide for clarification and discussion by the Senate and the House of Representatives. In recognition of the need for public understanding, presentations of the reports shall be made to the maximum extent possible in open session and by means of unclassified written materials.

"SEC. 203. CHAIRMAN. — Vacancies in the membership of the Joint Committee shall not affect the power of the remaining members to execute the functions of the Joint Committee, and shall be filled in the same manner as in the case of the original selection. The Joint Committee shall select a Chairman and a Vice Chairman from among its members at the beginning of each Congress. The Vice Chairman shall act in the place and stead of the Chairman in the absence of the Chairman. The Chairmanship shall alternate between the Senate and the House of Representatives with each Congress, and the Chairman shall be selected by the Members from that House entitled to the Chairmanship. The Vice Chairman shall be chosen from the House other than that of the Chairman by the Members from that House.

Chairman. 42 U.S.C. sec. 2253.

"SEC. 204. POWERS. — In carrying out its duties under this Act, the Joint Committee, or any duly authorized subcommittee thereof, is authorized to hold such hearings or investigations, to sit and act at such places and times, to require, by subpena or otherwise, the attend-

Powers. 42 U.S.C. sec. 2254.

ance of such witnesses and the production of such books, papers, and documents, to administer such oaths, to take such testimony, to procure such printing and binding, and to make such expenditures as it deems advisable. The Joint Committee may make such rules respecting its organization and procedures as it deems necessary: *Provided, however,* That no measure or recommendation shall be reported from the Joint Committee unless a majority of the committee assent. Subpenas may be issued over the signature of the Chairman of the Joint Committee or by any member designated by him or by the Joint Committee, and may be served by such person or persons as may be designated by such Chairman or member. The Chairman of the Joint Committee or any member thereof may administer oaths to witnesses.

Committee seal. 2 U.S.C. 192-194.

The Joint Committee may use a committee seal. The provisions of sections 102 to 104, inclusive, of the Revised Statutes, as amended, shall apply in case of any failure of any witness to comply with a subpena or to testify when summoned under authority of this section. The expenses of the Joint Committee shall be paid from the contingent fund of the Senate from funds appropriated for the Joint Committee upon vouchers approved by the Chairman. The cost of stenographic service to report public hearings shall not be in excess of the amounts prescribed by law for reporting the hearings of standing committees of the Senate. The cost of stenographic service to report executive hearings shall be fixed at an equitable rate by the

Joint Committee. Members of the Joint Committee, and its employees and consultants, while traveling on official business for the Joint Committee, may receive either the per diem allowance authorized to be paid to Members of Congress or its employees, or their actual and necessary expenses provided an itemized statement of such expenses is attached to the voucher.

Staff and assistance. 42 U.S.C. sec. 2255.

"SEC. 205. STAFF AND ASSISTANCE. — The Joint Committee is empowered to appoint and fix the compensation of such experts, consultants, technicians, and staff employees as it deems necessary and advisable. The Joint Committee is authorized to utilize the services, information, facilities, and personnel of the departments and establishments of the Government. The Joint Committee is authorized to permit such of its members, employees, and consultants as it deems necessary in the interest of common defense and security to carry firearms while in the discharge of their official duties for the committee.

Classification of information. 42 U.S.C. sec. 2256.

"SEC. 206. CLASSIFICATION OF INFORMATION. — The Joint Committee may classify information originating within the committee in accordance with standards used generally by the executive branch for classifying Restricted Data or defense information.

Records. 42 U.S.C. sec. 2257.

"SEC. 207. RECORDS. — The Joint Committee shall keep a complete record of all committee actions, including a record of the votes on any

question on which a record vote is demanded. All committee records, data, charts and files shall be the property of the Joint Committee and shall be kept in the offices of the Joint Committee or other places as the Joint Committee may direct under such security safeguards as the Joint Committee shall determine in the interest of the common defense and security.

"CHAPTER 19. MISCELLANEOUS

Report to Congress. 42 U.S.C. sec. 2016.

"SEC. 251. REPORT TO CONGRESS. — The Commission shall submit to the Congress, in January of each year, a report concerning the activities of the Commission. The Commission shall include in such report, and shall at such other times as it deems desirable submit to the Congress, such recommendations for additional legislation as the Commission deems necessary or desirable.

Energy Reorganization Act of 1974

AN ACT

To reorganize and consolidate certain functions of the Federal Government in a new Energy Research and Development Administration and in a new Nuclear Regulatory Commission in order to promote more efficient management of such functions.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SHORT TITLE

Energy Reorganization Act of 1974.

SECTION 1. This Act may be cited as the "Energy Reorganization Act of 1974". 42 U.S.C. 5801 note.

DECLARATION OF PURPOSE

SEC. 2. (a) The Congress hereby declares that the general welfare and the common defense and security require effective action to develop, and increase the efficiency and reliability of use of, all energy sources to meet the needs of present and future generations, to increase the productivity of the national economy and strengthen its position in regard to international trade, to make the Nation self-sufficient in energy, to advance the goals of restoring, protecting, and enhancing environmental quality, and to assure public health and safety. 42 U.S.C. 5801.

Energy Research and Development Administration, establishment.

(b) The Congress finds that, to best achieve these objectives, improve Government operations, and assure the coordinated and effective development of all energy sources, it is necessary to establish an Energy Research and Development Administration to bring together and direct Federal activities relating to research and development on the various sources of energy, to increase the efficiency and reliability in the use of energy, and to carry out the performance of other functions, including but not limited to the Atomic Energy Commission's military and production activities and its general basic research activities. In establishing an Energy Research and Development Administration to achieve these objectives, the Congress intends that all possible sources of energy be developed consistent with warranted priorities.

88 Stat. 1233.
88 Stat. 1234.

Separation of AEC licensing and regulatory functions.

(c) The Congress finds that it is in the public interest that the licensing and related regulatory functions of the Atomic Energy Commission be separated from the performance of the other functions of the Commission, and that this separation be effected in an orderly manner, pursuant to this Act, assuring adequacy of technical and other resources necessary for the performance of each.

Small business participation.

(d) The Congress declares that it is in the public interest and the policy of Congress that small business concerns be given a reasonable opportunity to participate, insofar as is possible, fairly and equitably in grants, contracts, purchases, and other Federal activities relating

to research, development, and demonstration of sources of energy efficiency, and utilization and conservation of energy. In carrying out this policy, to the extent practicable, the Administrator shall consult with the Administrator of the Small Business Administration.

Priorities.

(e) Determination of priorities which are warranted should be based on such considerations as power-related values of an energy source, preservation of material resources, reduction of pollutants, export market potential (including reduction of imports), among others. On such a basis, energy sources warranting priority might include, but not be limited to, the various methods of utilizing solar energy.

TITLE I — ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION

ESTABLISHMENT

42 U.S.C. 5811.

SEC. 101. There is hereby established an independent executive agency to be known as the Energy Research and Development Administration (hereinafter in this Act referred to as the "Administration").

OFFICERS

Administrator.
42 U.S.C. 5812.

SEC. 102. (a) There shall be at the head of the Administration an Administrator of Energy Research and Development (hereinafter in this Act referred to as the "Administrator"), who shall be appointed from civilian life by the President by and with the advice and consent

of the Senate. A person may not be appointed as Administrator within two years after release from active duty as a commissioned officer of a regular component of an Armed Force. The Administration shall be administered under the supervision and direction of the Administrator, who shall be responsible for the efficient and coordinated management of the Administration.

Deputy Administrator.

(b) There shall be in the Administration a Deputy Administrator, who shall be appointed by the President, by and with the advice and consent of the Senate.

88 Stat. 1234. 88 Stat. 1235.

(c) The President shall appoint the Administrator and Deputy Administrator from among individuals who, by reason of their general background and experience are specially qualified to manage a full range of energy research and development programs.

Assistant Administrators.

(d) There shall be in the Administration six Assistant Administrators, one of whom shall be responsible for fossil energy, another for nuclear energy, another for environment and safety, another for conservation, another for solar, geothermal, and advanced energy systems, and another for national security. The Assistant Administrators shall be appointed by the President, by and with the advice and consent of the Senate. The President shall appoint each Assistant Administrator from among individuals who, by reason of general background and experience, are specially qualified to manage the energy technology area assigned to such Assistant Administrator.

General Counsel.

(e) There shall be in the Administration a General Counsel who shall be appointed by the Administrator and who shall serve at the pleasure of and be removable by the Administrator.

Additional officers.

(f) There shall be in the Administration not more than eight additional officers appointed by the Administrator. The positions of such officers shall be considered career positions and be subject to subsection 161 d. of the Atomic Energy Act.

Director of Military Application.

(g) The Division of Military Application transferred to and established in the Administration by section 104 (d) of this Act shall be under the direction of a Director of Military Application, who shall be appointed by the Administrator and who shall serve at the pleasure of and be removable by the Administrator and shall be an active commissioned officer of the Armed Forces serving in general or flag officer rank or grade. The functions, qualifications, and compensation of the Director of Military Application shall be the same as those provided under the Atomic Energy Act of 1954, as amended, for the Assistant General Manager for Military Application.

42 U.S.C. 2011 note.

International cooperation.

(h) Officers appointed pursuant to this section shall perform such functions as the Administrator shall specify from time to time. The Administrator shall delegate to one such officer the special responsibility for international cooperation in all energy and related environmental research and development.

Order of succession.

(i) The Deputy Administrator (or in the absence or disability of the Deputy Administra-

tor, or in the event of a vacancy in the office of the Deputy Administrator, an Assistant Administrator, the General Counsel or such other official, determined according to such order as the Administrator shall prescribe) shall act for and perform the functions of the Administrator during any absence or disability of the Administrator or in the event of a vacancy in the office of the Administrator.

RESPONSIBILITIES OF THE ADMINISTRATOR

42 U.S.C. 5813.

SEC. 103. The responsibilities of the Administrator shall include, but not be limited to —

88 Stat. 1235.
88 Stat. 1236.

(1) exercising central responsibility for policy planning, coordination, support, and management of research and development programs respecting all energy sources, including assessing the requirements for research and development in regard to various energy sources in relation to near-term and long-range needs, policy planning in regard to meeting those requirements, undertaking programs for the optimal development of the various forms of energy sources, managing such programs, and disseminating information resulting therefrom:

(2) encouraging and conducting research and development, including demonstration of commercial feasibility and practical applications of the extraction, conversion, storage, transmission, and utilization phases related to the development and use of energy from fossil, nuclear, solar, geothermal, and other energy sources;

(3) engaging in and supporting environmental, biomedical, physical, and safety research related to the development of energy sources and utilization technologies;

(4) taking into account the existence, progress, and results of other public and private research and development activities, including those activities of the Federal Energy Administration relating to the development of energy resources using currently available technology in promoting increased utilization of energy resources, relevant to the Administration's mission in formulating its own research and development programs;

(5) participating in and supporting cooperative research and development projects which may involve contributions by public or private persons or agencies, of financial or other resources to the performance of the work;

(6) developing, collecting, distributing, and making available for distribution, scientific and technical information concerning the manufacture or development of energy and its efficient extraction, conversion, transmission, and utilization;

(7) creating and encouraging the development of general information to the public on all energy conservation technologies and energy sources as they become available for general use, and the Administrator, in conjunction with the Administrator of the Federal Energy Administration shall, to the extent practicable, disseminate such information through the use of mass communications;

(8) encouraging and conducting research and development in energy conservation, which shall be directed toward the goals of reducing total energy consumption to the maximum extent practicable, and toward maximum possible improvement in the efficiency of energy use. Development of new and improved conservation measures shall be conducted with the goal of the most expeditious possible application of these measures;

(9) encouraging and participating in international cooperation in energy and related environmental research and development;

88 Stat. 1236.
88 Stat. 1237.

(10) helping to assure an adequate supply of manpower for the accomplishment of energy research and development programs, by sponsoring and assisting in education and training activities in institutions of higher education, vocational schools, and other institutions, and by assuring the collection, analysis, and dissemination of necessary manpower supply and demand data;

(11) encouraging and conducting research and development in clean and renewable energy sources.

ABOLITION AND TRANSFERS

Atomic Energy Commission.
42 U.S.C. 5814.

SEC. 104. (a) The Atomic Energy Commission is hereby abolished. Sections 21 and 22 of the Atomic Energy Act of 1954, as amended (42 U.S.C. 2031 and 2032) are repealed.

(b) All other functions of the Commission, the Chairman and members of the Commission,

and the officers and components of the Commission are hereby transferred or allowed to lapse pursuant to the provisions of this Act.

(c) There are hereby transferred to and vested in the Administrator all functions of the Atomic Energy Commission, the Chairman and members of the Commission, and the officers and components of the Commission, except as otherwise provided in this Act.

(d) The General Advisory Committee established pursuant to section 26 of the Atomic Energy Act of 1954, as amended (42 U.S.C. 2036), the Patent Compensation Board established pursuant to section 157 of the Atomic Energy Act of 1954, as amended (42 U.S.C. 2187) and the Divisions of Military Application and Naval Research established pursuant to section 25 of the Atomic Energy Act of 1954, as amended (42 U.S.C. 2035), are transferred to the Energy Research and Development Administration and the functions of the Commission with respect thereto, and with respect to relations with the Military Liaison Committee established by section 27 of the Atomic Energy Act of 1954, as amended (42 U.S.C. 2037), are transferred to the Administrator.

Interior Department functions.

(e) There are hereby transferred to and vested in the Administrator such functions of the Secretary of the Interior, the Department of the Interior, and officers and components of such department —

(1) as relate to or are utilized by the Office of Cost Research established pursuant to the

Act of June 1, 1960 (74 Stat. 336; 30 U.S.C. 661-668);

(2) as relate to or are utilized in connection with fossil fuel energy research and development programs and related activities conducted by the Bureau of Mines "energy centers" and synthane plant to provide greater efficiency in the extraction, processing and utilization of energy resources for the purpose of conserving those resources, developing alternative energy resources such as oil and gas secondary and tertiary recovery, oil, shale and synthetic fuels, in proving methods of managing energy-related waste and pollutants, and providing technical guidance needed to establish and administer national energy policies; and

(3) as relate to or are utilized for underground electric power transmission research.

88 Stat. 1238. Helium applications study.

The Administrator shall conduct a study of the potential energy applications of helium and, within six months from the date of the enactment of this Act, report to the President and Congress his recommendations concerning the management of the Federal helium programs, as they relate to energy.

88 Stat. 1238. Report to President and Congress.

National Science Foundation functions.

(f) There are hereby transferred to and vested in the Administrator such functions of the National Science Foundation as relate to or are utilized in connection with —

(1) solar heating and cooling development; and

(2) geothermal power development.

Environmental Protection Agency functions.

(g) There are hereby transferred to and vested in the Administrator such functions of the Environmental Protection Agency and the officers and components thereof as relate to or are utilized in connection with research, development, and demonstration, but not assessment of monitoring for regulatory purposes, of alternative automotive power systems.

(h) To the extent necessary or appropriate to perform functions and carry out programs transferred by this Act, the Administrator and Commissions may exercise, in relation to the functions so transferred, any authority or part thereof available by law, including appropriation Acts, to the official or agency from which such functions were transferred.

Use of other agencies' capabilities.

(i) In the exercise of his responsibilities under section 103, the Administrator shall utilize, with their consent, to the fullest extent he determines advisable the technical and management capabilities of other executive agencies having facilities, personnel, or other resources which can assist or advantageously be expanded to assist in carrying out such responsibilities. The Administrator shall consult with the head of each agency with respect to such facilities, personnel, or other resources, and may assign, with their consent, specific programs or projects in energy research and development as appropriate. In making such assignments under this subsection, the head of each such agency shall insure that —

(1) such assignments shall be in addition to and not detract from the basic mission responsibilities of the agency, and

(2) such assignments shall be carried out under such guidance as the Administrator deems appropriate.

ADMINISTRATIVE PROVISIONS

Regulations. 42 U.S.C. 5815.

SEC. 105. (a) The Administrator is authorized to prescribe such policies, standards, criteria, procedures, rules, and regulations as he may deem to be necessary or appropriate to perform functions now or hereafter vested in him.

Policy planning and evaluation.

(b) The Administrator shall engage in such policy planning, and perform such program evaluation analyses and other studies, as may be necessary to promote the efficient and coordinated administration of the Administration and properly assess progress toward the achievement of its missions.

Delegation of functions.

(c) Except as otherwise expressly provided by law, the Administrator may delegate any of his functions to such officers and employees of the Administration as he may designate, and may authorize such successive redelegations of such functions as he may deem to be necessary or appropriate.

Organization.

(d) Except as provided in section 102 and in section 104(d), the Administrator may organize the Administration as he may deem to be necessary or appropriate.

Field offices.

(e) The Administrator is authorized to establish, maintain, alter, or discontinue such State, regional, district, local, or other field offices as he may deem to be necessary or appropriate to perform functions now or hereafter vested in him.

88 Stat. 1239. Seal.

(f) The Administrator shall cause a seal of office to be made for the Administration of such device as he shall approve, and judicial notice shall be taken of such seal.

Working capital fund.

(g) The Administrator is authorized to establish a working capital fund, to be available without fiscal year limitation, for expenses necessary for the maintenance and operation of such common administrative services he shall find to be desirable in the interests of economy and efficiency. There shall be transferred to the fund the stocks of supplies, equipment, assets other than real property, liabilities, and unpaid obligations relating to the services which he determines will be performed through the fund. Appropriations to the fund, in such amounts as may be necessary to provide additional working capital are authorized. The working capital fund shall recover from the appropriations and funds for which services are performed, either in advance or by way of reimbursement, amounts which will approximate the costs incurred including the accrual of annual leave and the depreciation of equipment. The fund shall also be credited with receipts from the sale or exchange of its property, and receipts in payment for loss or damage to property owned by the fund.

Information from other agencies.

(h) Each department, agency, and instrumentality of the executive branch of the Government is authorized to furnish to the Administrator, upon his request, any information or other data which the Administrator deems necessary to carry out his duties under this title.

PERSONNEL AND SERVICES

Appointment and pay.
42 U.S.C. 5816

SEC. 106. (a) The Administrator is authorized to select, appoint, employ, and fix the compensation of such officers and employees, including attorneys, pursuant to section 161 d. of the Atomic Energy Act of 1954, as amended (42 U.S.C. 2201(d)) as are necessary to perform the functions now or hereafter vested in him and to prescribe their functions.

Experts and consultants.

(b) The Administrator is authorized to obtain services as provided by section 3109 of title 5 of the United States Code.

Military personnel.

(c) The Administrator is authorized to provide for participation of military personnel in the performance of his functions. Members of the Army, the Navy, the Air Force, or the Marine Corps may be detailed for service in the Administration by the appropriate military Secretary, pursuant to cooperative agreements with the Secretary, for service in the Administration in positions other than a position the occupant of which must be approved by and with the advice and consent of the Senate.

(d) Appointment, detail, or assignment to, acceptance of, and service in, any appointive or other position in the Administration under this

section shall in no way alter the status, office, rank, or grade which such officers or enlisted men may occupy or hold, or any emolument, prerequisite, right, privilege, or benefit incident to or arising out of any such status, office, rank, or grade. A member so appointed, detailed, or assigned shall not be subject to direction or control by his Armed Force, or any officer thereof, directly or indirectly, with respect to the responsibilities exercised in the position to which appointed, detailed, or assigned.

Transportation and per diem.

(e) The Administrator is authorized to pay transportation expenses, and per diem in lieu of subsistence expenses, in accordance with chapter 57 of title 5 of the United States Code for travel between places of recruitment and duty, and while at places of duty, of persons appointed for emergency, temporary, or seasonal services in the field service of the Administration.

88 Stat. 1240. Personnel of other agencies.

(f) The Administrator is authorized to utilize, on a reimbursable basis, the services of any personnel made available by any department, agency, or instrumentality, including any independent agency of the Government.

Advisory boards.
5 U.S.C. app. I.

(g) The Administrator is authorized to establish advisory boards, in accordance with the provisions of the Federal Advisory Committee Act (Public Law 92-463), to advise with and make recommendations to the Administrator on legislation, policies, administration, research, and other matters.

Noncitizens.

(h) The Administrator is authorized to employ persons who are not citizens of the United

States in expert, scientific, technical, or professional capacities whenever he deems it in the public interest.

POWERS

Research and development.

42 U.S.C. 5817

SEC. 107. (a) The Administrator is authorized to exercise his powers in such manner as to insure the continued conduct of research and development and related activities in areas or fields deemed by the Administrator to be pertinent to the acquisition of an expanded fund of scientific, technical, and practical knowledge in energy matters. To this end, the Administrator is authorized to make arrangements (including contracts, agreements, and loans) for the conduct of research and development activities with private or public institutions or persons, including participation in joint or cooperative projects of a research, developmental, or experimental nature; to make payments (in lump sum or installments, and in advance or by way of reimbursement, with necessary adjustments on account of overpayments or underpayments); and generally to take such steps as he may deem necessary or appropriate to perform functions now or hereafter vested in him. Such functions of the Administrator under this Act as are applicable to the nuclear activities transferred pursuant to this title shall be subject to the provisions of the Atomic Energy Act of 1954, as amended, and to other authority applicable to such nuclear activities. The non-nuclear responsibilities and functions of the Administrator referred to in sections 103 and 104 of this

Contracts, etc.

42 U.S.C. 2011 note.

Act shall be carried out pursuant to the provisions of this Act, applicable authority existing immediately before the effective date of this Act, or in accordance with the provisions of chapter 4 of the Atomic Energy Act of 1954, as amended (42 U.S.C. 2051-2053).

Facilities and real property.
40 U.S.C. 601 note.
5 U.S.C. app. II.

(b) Except for public buildings as defined in the Public Buildings Act of 1959, as amended, and with respect to leased space subject to the provisions of Reorganization Plan Numbered 18 of 1950, the Administrator is authorized to acquire (by purchase, lease, condemnation, or otherwise), construct, improve, repair, operate, and maintain facilities and real property as the Administrator deems to be necessary in and outside of the District of Columbia. Such authority shall apply only to facilities required for the maintenance and operation of laboratories, research and testing sites and facilities, quarters, and related accommodations for employees and dependents of employees of the Administration, and such other special-purpose real property as the Administrator deems to be necessary in and outside the District of Columbia. Title to any property or interest therein, real, personal, or mixed, acquired pursuant to this section, shall be in the United States.

Services for employees at remote locations.

(c)(1) The Administrator is authorized to provide, construct, or maintain, as necessary and when not otherwise available, the following for employees and their dependents stationed at remote locations:

(A) Emergency medical services and supplies.

(B) Food and other subsistence supplies.

88 Stat. 1241.

(C) Messing facilities.

(D) Audiovisual equipment, accessories, and supplies for recreation and training.

(E) Reimbursement for food, clothing, medicine, and other supplies furnished by such employees in emergencies for the temporary relief of distressed persons.

(F) Living and working quarters and facilities.

(G) Transportation for school-age dependents of employees to the nearest appropriate educational facilities.

(2) The furnishing of medical treatment under sub-paragraph (A) of paragraph (1) and the furnishing of services and supplies under paragraphs (B) and (C) of paragraph (1) shall be at prices reflecting reasonable value as determined by the Administrator.

(3) Proceeds from reimbursements under this section shall be deposited in the Treasury and may be withdrawn by the Administrator to pay directly the cost of such work or services, to repay or make advances to appropriations or funds which do or will bear all or a part of such cost, or to refund excess sums when necessary; except that such payments may be credited to a service or working capital fund otherwise established by law, and used under the law governing such funds, if the fund is available for use by the Administrator for performing the work or services for which payment is received.

Acquisition of copyrights, patents, etc.

(d) The Administrator is authorized to acquire any of the following described rights if the property acquired thereby is for use in, or is

useful to, the performance of functions vested in him:

(1) Copyrights, patents, and applications for patents, designs, processes, specifications, and data.

(2) Licenses under copyrights, patents, and applications for patents.

(3) Releases, before suit is brought, for past infringement of patents or copyrights.

Dissemination of information.

(e) Subject to the provisions of chapter 12 of the Atomic Energy Act of 1954, as amended (42 U.S.C. 2161-2166), and other applicable law, the Administrator shall disseminate scientific, technical, and practical information acquired pursuant to this title through information programs and other appropriate means, and shall encourage the dissemination of scientific, technical, and practical information relating to energy so as to enlarge the fund of such information and to provide that free interchange of ideas and criticism which is essential to scientific and industrial progress and public understanding.

Gifts and bequests.

(f) The Administrator is authorized to accept, hold, administer, and utilize gifts, and bequests of property, both real and personal, for the purpose of aiding or facilitating the work of the Administration. Gifts and bequests of money and proceeds from sales of other property received as gifts or bequests shall be deposited in the Treasury and shall be disbursed upon the order of the Administrator. For the purposes of Federal income, estate, and gift taxes, property accepted under this section shall be considered as a gift or bequest to the United States.

INTERIM COORDINATION

Energy Resources Council, establishment. 42 U.S.C. 5818.

SEC. 108. (a) There is established in the Executive Office of the President an Energy Resources Council. The Council shall be composed of the Secretary of the Interior, the Administrator of the Federal Energy Administration, the Administrator of the Energy Research and Development Administration, the Secretary of State, the Director, Office of Management and Budget, and such other officials of the Federal Government as the President may designate. The President shall designate one of the members of the Council to serve as Chairman.

88 Stat. 1242.

(b) It shall be the duty and function of the Council to —

(1) insure communication and coordination among the agencies of the Federal Government which have responsibilities for the development and implementation of energy policy or for the management of energy resources:

(2) make recommendations to the President and to the Congress for measures to improve the implementation of Federal energy policies or the management of energy resources with particular emphasis upon policies and activities involving two or more Departments or independent agencies; and

(3) advise the President in the preparation of the reorganization recommendations required by section 110 of this Act.

Testimony before Congress.

(c) The Chairman of the Council may not refuse to testify before the Congress or any duly

authorized committee thereof regarding the duties of the Council or other matters concerning interagency coordination of energy policy and activities.

Effective date. Publication in Federal Register.

(d) This section shall be effective no later than sixty days after the enactment of this Act or such earlier date as the President shall prescribe and publish in the Federal Register, and shall terminate upon enactment of a permanent department responsible for energy and natural resources or two years after such effective date, whichever shall occur first.

FUTURE REORGANIZATION

Report to Congress. 42 U.S.C. 5819.

SEC. 109. (a) The President shall transmit to the Congress as promptly as possible, but not later than June 30, 1975, such additional recommendations as he deems advisable for organization of energy and related functions in the Federal Government, including, but not limited to, whether or not there shall be established (1) a Department of Energy and Natural Resources, (2) an Energy Policy Council, and (3) a consolidation in whole or in part of regulatory functions concerning energy.

(b) This report shall replace and serve the purposes of the report required by section 15(a) (4) of the Federal Energy Administration Act.

Ante, p. 109.

COORDINATION WITH ENVIRONMENTAL EFFORTS

42 U.S.C. 5820.

SEC. 110. The Administrator is authorized to establish programs to utilize research and development performed by other Federal agen-

cies to minimize the adverse environmental effects of energy projects. The Administrator of the Environmental Protection Agency, as well as other affected agencies and departments, shall cooperate fully with the Administrator in establishing and maintaining such programs, and in establishing appropriate inter-agency agreements to develop cooperative programs and to avoid unnecessary duplication.

TITLE II — NUCLEAR REGULATORY COMMISSION

ESTABLISHMENT AND TRANSFERS

Members and Chairman. 42 U.S.C. 5841.

SEC. 201. (a) There is established an independent regulatory commission to be known as the Nuclear Regulatory Commission which shall be composed of five members, each of whom shall be a citizen of the United States. The

88 Stat. 1243.

President shall designate one member of the Commission as Chairman thereof to serve as such during the pleasure of the President. The Chairman may from time to time designate any other member of the Commission as Acting Chairman to act in the place and stead of the Chairman during his absence. The Chairman (or the Acting Chairman in the absence of the Chairman) shall preside at all meetings of the Commission and a quorum for the transaction of business shall consist of at least three members present. Each member of the Commission, including the Chairman, shall have equal responsibility and authority in all decisions and actions of the Commission, shall have full access to all information relating to the performance of his duties or responsibilities, and shall have one vote. Action of the Commission shall be determined by a majority vote of the members present. The Chairman (or Acting Chairman in the absence of the Chairman) shall be the official spokesman of the Commission in its relations with the Congress, Government agencies, persons, or the public, and, on behalf of the Commission, shall see to the faithful execution of the policies and decisions of the Commission, and shall report thereon to the Commission from time to time or as the Commission may direct. The Commission shall have an official seal which shall be judicially noticed.

Seal.

(b)(1) Members of the Commission shall be appointed by the President, by and with the advice and consent of the Senate.

(2) Appointments of members pursuant to this sub-section shall be made in such a manner that not more than three members of the Commission shall be members of the same political party.

(c) Each member shall serve for a term of five years, each such term to commence on July 1, except that of the five members first appointed to the Commission, one shall serve for one year, one for two years, one for three years, one for four years, and one for five years, to be designated by the President at the time of appointment.

Submission of appointments to Senate.

(d) Such initial appointments shall be submitted to the Senate within sixty days of the

signing of this Act. Any individual who is serving as a member of the Atomic Energy Commission at the time of the enactment of this Act, and who may be appointed by the President to the Commission, shall be appointed for a term designated by the President, but which term shall terminate not later than the end of his present term as a member of the Atomic Energy Commission, without regard to the requirements of subsection (b)(2) of this section. Any subsequent appointment of such individuals shall be subject to the provisions of this section.

(e) Any member of the Commission may be removed by the President for inefficiency, neglect of duty, or malfeasance in office. No member of the Commission shall engage in any business, vocation, or employment other than that of serving as a member of the Commission.

Transfer of AEC functions and personnel.

(f) There are hereby transferred to the Commission all the licensing and related regulatory functions of the Atomic Energy Commission, the Chairman and members of the Commission, the General Counsel, and other officers and components of the Commission — which functions, officers, components, and personnel are excepted from the transfer to the Administrator by section 104(c) of this Act.

Additional transfers.

(g) In addition to other functions and personnel transferred to the Commission, there are also transferred to the Commission —

(1) the functions of the Atomic Safety and Licensing Board Panel and the Atomic Safety and Licensing Appeal Board;

(2) such personnel as the Director of the Office of Management and Budget determines are necessary for exercising responsibilities under section 205, relating to, research, for the purpose of confirmatory assessment relating to licensing and other regulation under the provisions of the Atomic Energy Act of 1954, as amended, and of this Act. 88 Stat. 1244. 42 U.S.C. 2011 note.

LICENSING AND RELATED REGULATORY FUNCTIONS RESPECTING SELECTED ADMINISTRATION FACILITIES

SEC. 202. Notwithstanding the exclusions provided for in section 110 a. or any other provisions of the Atomic Energy Act of 1954, as amended (42 U.S.C. 2140(a)), the Nuclear Regulatory Commission shall, except as otherwise specifically provided by section 110 b. of the Atomic Energy Act of 1954, as amended (42 U.S.C. 2140(b)), or other law, have licensing and related regulatory authority pursuant to chapters 6, 7, 8, and 10 of the Atomic Energy Act of 1954, as amended, as to the following facilities of the Administration: 42 U.S.C. 5842. 42 U.S.C. 2071-2112, 2131-2140.

(1) Demonstration Liquid Metal Fast Breeder reactors when operated as part of the power generation facilities of an electric utility system, or when operated in any other manner for the purpose of demonstrating the suitability for commercial application of such a reactor.

(2) Other demonstration nuclear reactors — except those in existence on the effective date of this Act — when operated as part of the power generation facilities of an electric utility system, or when operated in any other manner for

the purpose of demonstrating the suitability for commercial application of such a reactor.

(3) Facilities used primarily for the receipt and storage of high-level radioactive wastes resulting from activities licensed under such Act.

(4) Retrievable Surface Storage Facilities and other facilities authorized for the express purpose of subsequent long-term storage of high-level radioactive waste generated by the Administration, which are not used for, or are part of, research and development activities.

OFFICE OF NUCLEAR REACTOR REGULATION

Establishment. 42 U.S.C. 5843. Director.

SEC. 203. (a) There is hereby established in the Commission an Office of Nuclear Reactor Regulation under the direction of a Director of Nuclear Reactor Regulation, who shall be appointed by the Commission, who may report directly to the Commission, as provided in section 209, and who shall serve at the pleasure of and be removable by the Commission.

Functions.

(b) Subject to the provisions of this Act, the Director of Nuclear Reactor Regulation shall perform such functions as the Commission shall delegate including:

42 U.S.C. 2011 note.

(1) Principal licensing and regulation involving all facilities, and materials licensed under the Atomic Energy Act of 1954, as amended, associated with the construction and operation of nuclear reactors licensed under the Atomic Energy Act of 1954, as amended;

(2) Review the safety and safeguards of all such facilities, materials, and activities, and

such review functions shall include, but not be limited to—

(A) monitoring, testing and recommending upgrading of systems designed to prevent substantial health or safety hazards; and 88 Stat. 1245.

(B) evaluating methods of transporting special nuclear and other nuclear materials and of transporting and storing high-level radioactive wastes to prevent radiation hazards to employees and the general public.

(3) Recommend research necessary for the discharge of the functions of the Commission.

(c) Nothing in this section shall be construed to limit in any way the functions of the Administration relating to the safe operation of all facilities resulting from all activities within the jurisdiction of the Administration pursuant to this Act.

OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS

Establishment. 42 U.S.C. 5844. Director.

SEC. 204. (a) There is hereby established in the Commission an Office of Nuclear Material Safety and Safeguards under the direction of a Director of Nuclear Material Safety and Safeguards, who shall be appointed by the Commission, who may report directly to the Commission as provided in section 209, and who shall serve at the pleasure of and be removable by the Commission.

Functions.

(b) Subject to the provisions of this Act, the Director of Nuclear Material Safety and Safeguards shall perform such functions as the Commission shall delegate, including:

42 U.S.C. 2011 note.

(1) Principal licensing and regulation involving all facilities and materials, licensed under the Atomic Energy Act of 1954, as amended, associated with the processing, transport, and handling of nuclear materials, including the provision and maintenance of safeguards against threats, thefts, and sabotage of such licensed facilities, and materials.

(2) Review safety and safeguards of all such facilities and materials licensed under the Atomic Energy Act of 1954, as amended, and such review shall include, but not be limited to—

(A) monitoring, testing, and recommending upgrading of internal accounting systems for special nuclear and other nuclear materials licensed under the Atomic Energy Act of 1954, as amended;

(B) developing, in consultation and coordination with the Administration, contingency plans for dealing with threats, thefts, and sabotage relating to special nuclear materials, high-level radioactive wastes and nuclear facilities resulting from all activities licensed under the Atomic Energy Act of 1954, as amended;

(C) assessing the need for, and the feasibility of, establishing a security agency within the office for the performance of the safeguards functions, and a report with recommendations on this matter shall be prepared within one year of the effective date of this Act and promptly transmitted to the Congress by the Commission.

Report to Congress.

(3) Recommending research to enable the Commission to more effectively perform its functions.

(c) Nothing in this section shall be construed to limit in any way the functions of the Administration relating to the safeguarding of special nuclear materials, high-level radioactive wastes and nuclear facilities resulting from all activities within the jurisdiction of the Administration pursuant to this Act.

88 Stat. 1246.

OFFICE OF NUCLEAR REGULATORY RESEARCH

SEC. 205. (a) There is hereby established in the Commission and Office of Nuclear Regulatory Research under the direction of a Director of Nuclear Regulatory Research, who shall be appointed by the Commission, who may report directly to the Commission as provided in section 209, and who shall serve at the pleasure of and be removable by the Commission.

Establishment. 42 U.S.C. 5845.

Director.

(b) Subject to the provisions of this Act, the Director of Nuclear Regulatory Research shall perform such functions as the Commission shall delegate including:

Functions.

(1) Developing recommendations for research deemed necessary for performance by the Commission of its licensing and related regulatory functions.

(2) Engaging in or contracting for research which the Commission deems necessary for the performance of its licensing and related regulatory functions.

(c) The Administrator of the Administration and the head of every other Federal agency shall —

Cooperation of Federal agencies.

(1) cooperate with respect to the establishment of priorities for the furnishing of such research services as requested by the Commission for the conduct of its functions;

(2) furnish to the Commission, on a reimbursable basis, through their own facilities or by contract or other arrangement, such research services as the Commission deems necessary and requests for the performance of its functions; and

(3) consult and cooperate with the Commission on research and development matters of mutual interest and provide such information and physical access to its facilities as will assist the Commission in acquiring the expertise necessary to perform its licensing and related regulatory functions.

(d) Nothing in subsections (a) and (b) of this section or section 201 of this Act shall be construed to limit in any way the functions of the Administration relating to the safety of activities within the jurisdiction of the Administration.

Information and research services.

(e) Each Federal agency, subject to the provisions of existing law, shall cooperate with the Commission and provide such information and research services, on a reimbursable basis, as it may have or be reasonably able to acquire.

NONCOMPLIANCE

42 U.S.C. 5846.

SEC. 206. (a) Any individual director, or responsible officer of a firm constructing, owning, operating, or supplying the components of any

42 U.S.C. 2011 note.

facility or activity which is licensed or otherwise regulated pursuant to the Atomic Energy Act of 1954 as amended, or pursuant to this Act, who obtains information reasonably indicating that such facility or activity or basic components supplied to such facility or activity —

(1) fails to comply with the Atomic Energy Act of 1954, as amended, or any applicable rule, regulation, order, or license of the Commission relating to substantial safety hazards, or

(2) contains a defect which would create a substantial safety hazard, as defined by regulations which the Commission shall promulgate,

shall immediately notify the Commission of such failure to comply, or of such defect, unless such person has actual knowledge that the Commission has been adequately informed of such defect or failure to comply.

88 Stat. 1247.

Penalty.

(b) Any person who knowingly and consciously fails to provide the notice required by subsection (a) of this section shall be subject to a civil penalty in an amount equal to the amount provided by section 234 of the Atomic Energy Act of 1954, as amended.

42 U.S.C. 2282.

Posting of requirements.

(c) The requirements of this section shall be prominently posted on the premises of any facility licensed or otherwise regulated pursuant to the Atomic Energy Act of 1954, as amended.

42 U.S.C. 2011 note.

Enforcement.

(d) The Commission is authorized to conduct such reasonable inspections and other enforcement activities as needed to insure compliance with the provisions of this section.

NUCLEAR ENERGY CENTER SITE SURVEY

42 U.S.C. 5847.

SEC. 207. (a)(1) The Commission is authorized and directed to make or cause to be made under its direction, a national survey, which shall include consideration of each of the existing or future electric reliability regions, or other appropriate regional areas, to locate and identify possible nuclear energy center sites. This survey shall be conducted in cooperation with other interested Federal, State, and local agencies, and the views of interested persons, including electric utilities, citizens' groups, and others, shall be solicited and considered.

Federal-State-local cooperation. Solicitation of views.

Definition.

(2) For purposes of this section, the term "nuclear energy center site" means any site, including a site not restricted to land, large enough to support utility operations or other elements of the total nuclear fuel cycle, or both including, if appropriate, nuclear fuel reproces sing facilities, nuclear fuel fabrication plants, retrievable nuclear waste storage facilities, and uranium enrichment facilities.

(3) The survey shall include —

(a) a regional evaluation of natural resources, including land, air, and water resources, available for use in connection with nuclear energy center sites; estimates of future electric power requirements that can be served by each nuclear energy center site; an assessment of the economic impact of each nuclear energy site; and consideration of any other relevant factors, including but not limited to population distribution, proximity to electric load centers and to other elements of the fuel cycle, transmission

line rights-of-way, and the availability of other fuel resources;

(b) an evaluation of the environmental impact likely to result from construction and operation of such nuclear energy centers, including an evaluation whether such nuclear energy centers will result in greater or lesser environmental impact than separate siting of the reactors and/or fuel cycle facilities; and

(c) consideration of the use of federally owned property and other property designated for public use, but excluding national parks, national forests, national wilderness areas, and national historic monuments.

Report to Congress and Council on Environmental Quality; public availability.

(4) A report of the results of the survey shall be published and transmitted to the Congress and the Council on Environmental Quality not later than one year from the date of the enactment of this Act and shall be made available to the public, and shall be updated from time to time thereafter as the Commission, in its discretion, deems advisable. The report shall include the Commission's evaluation of the results of the survey and any conclusions and recommendations, including recommendations for legislation, which the Commission may have concerning the feasibility and practicality of locating nuclear power reactors and/or other elements of the nuclear fuel cycle or nuclear energy center sites. The Commission is authorized to adopt policies which will encourage the location of nuclear power reactors and related fuel cycle facilities on nuclear energy center sites insofar as practicable.

88 Stat. 1248.

ABNORMAL OCCURRENCE REPORTS

Reports to Congress. 42 U.S.C. 5848.

SEC. 208. The Commission shall submit to the Congress each quarter a report listing for that period any abnormal occurrences at or associated with any facility which is licensed or otherwise regulated pursuant to the Atomic Energy Act of 1954 as amended, or pursuant to this Act. For the purposes of this section an abnormal occurrence is an unscheduled incident or event which the Commission determines is significant from the standpoint of public health or safety. Nothing in the preceding sentence shall limit the authority of a court to review the determination of the Commission. Each such report shall contain —

42 U.S.C. 2011 note.

(1) the date and place of each occurrence;

(2) the nature and probable consequence of each occurrence;

(3) the cause or causes of each; and

(4) any action taken to prevent reoccurrence;

Public dissemination of information.

the Commission shall also provide as wide dissemination to the public of the information specified in clauses (1) and (2) of this section as reasonably possible within fifteen days of its receiving information of each abnormal occurrence and shall provide as wide dissemination to the public as reasonably possible of the information specified in clauses (3) and (4) as soon as such information becomes available to it.

OTHER OFFICERS

Executive Director. 42 U.S.C. 5849.

SEC. 209. (a) The Commission shall appoint an Executive Director for Operations, who shall

serve at the pleasure of and be removable by the Commission.

Functions.

(b) The Executive Director shall perform such functions as the Commission may direct, except that the Executive Director shall not limit the authority of the director of any component organization provided in this Act to communicate with or report directly to the Commission when such director of a component organization deems it necessary to carry out his responsibilities.

Other officers.

(c) There shall be in the Commission not more than five additional officers appointed by the Commission. The positions of such officers shall be considered career positions and be subject to subsection 161 d. of the Atomic Energy Act.

42 U.S.C. 2201.

TITLE III — MISCELLANEOUS AND TRANSITIONAL PROVISIONS

TRANSITIONAL PROVISIONS

Lapses of agencies and positions. 42 U.S.C. 5871.

SEC. 301. (a) Except as otherwise provided in this Act, whenever all of the functions or programs of an agency, or other body, or any component thereof, affected by this Act, have been transferred from that agency, or other body, or any component thereof by this Act, the agency, or other body, or component thereof shall lapse. If an agency, or other body, or any component thereof, lapses pursuant to the preceding sentence, each position and office therein which was expressly authorized by law, or the incumbent

of which was authorized to receive compensation at the rate prescribed for an office or position at level II, III, IV, or V of the Executive Schedule (5 U.S.C. 5313-5316), shall lapse.

88 Stat. 1249.

Savings clauses.

(b) All orders, determinations, rules, regulations, permits, contracts, certificates, licenses, and privileges —

(1) which have been issued, made, granted, or allowed to become effective by the President, any Federal department or agency or official thereof, or by a court of competent jurisdiction, in the performance of functions which are transferred under this Act, and

(2) which are in effect at the time this Act takes effect,

shall continue in effect according to their terms until modified, terminated, superseded, set aside, or revoked by the President, the Administrator, the Commission, or other authorized officials, a court of competent jurisdiction, or by operation of law.

(c) The provisions of this Act shall not affect any proceeding pending, at the time this section takes effect, before the Atomic Energy Commission or any department or agency (or component thereof) functions of which are transferred by this Act; but such proceedings, to the extent that they relate to functions so transferred, shall be continued. Orders shall be issued in such proceedings, appeals shall be taken therefrom, and payments shall be made pursuant to such orders, as if this Act had not been enacted; and orders issued in any such proceedings shall continue in effect until modified, terminated, superseded, or revoked by a duly authorized official, by a court of competent jurisdiction, or by operation of law. Nothing in this subsection shall be deemed to prohibit the discontinuance or modification of any such proceeding under the same terms and conditions and to the same extent that such proceeding could have been discontinued if this Act had not been enacted.

(d) Except as provided in subsection (f) —

(1) the provisions of this Act shall not affect suits commenced prior to the date this Act takes effect, and

(2) in all such suits proceedings shall be had, appeals taken, and judgments rendered, in the same manner and effect as if this Act had not been enacted.

(e) No suit, action, or other proceeding commenced by or against any officer in his official capacity as an officer of any department or agency, functions of which are transferred by this Act, shall abate by reason of the enactment of this Act. No cause of action by or against any department or agency, functions of which are transferred by this Act, or by or against any officer thereof in his official capacity shall abate by reason of the enactment of this Act. Causes of actions, suits, actions, or other proceedings may be asserted by or against the United States or such official as may be appropriate and, in any litigation pending when this section takes effect, the court may at any time, on its own motion or that of any party, enter any order which will give effect to the provisions of this section.

(f) If, before the date on which this Act takes effect, any department or agency, or officer thereof in his official capacity, is a party to a suit, and under this Act any function of such department, agency, or officer is transferred to the Administrator or Commission, or any other official, then such suit shall be continued as if this Act had not been enacted, with the Administrator or Commission, or other official, as the case may be, substituted.

(g) Final orders and actions of any official or component in the performance of functions transferred by this Act shall be subject to judicial review to the same extent and in the same manner as if such orders or actions had been made or taken by the officer, department, agency, or instrumentality in the performance of such functions immediately preceding the effective date of the Act. Any statutory requirements relating to notices, hearings, action upon the record, or administrative review that apply to any function transferred by this Act shall apply to the performance of those functions by the Administrator or Commission, or any officer or component.

88 Stat. 1250.

(h) With respect to any function transferred by this Act and performed after the effective date of this Act, reference in any other law to any department or agency, or any officer or office, the functions of which are so transferred, shall be deemed to refer to the Administration, the Administrator or Commission, or other office or official in which this Act vests such functions.

(i) Nothing contained in this Act shall be construed to limit, curtail, abolish, or terminate

any function of the President which he had immediately before the effective date of this Act; or to limit, curtail, abolish, or terminate his authority to perform such function; or to limit, curtail, abolish, or terminate his authority to delegate, redelegate, or terminate any delegation of functions.

(j) Any reference in this Act to any provision of law shall be deemed to include, as appropriate, references thereto as now or hereafter amended or supplemented.

(k) Except as may be otherwise expressly provided in this Act, all functions expressly conferred by this Act shall be in addition to and not in substitution for functions existing immediately before the effective date of this Act and transferred by this Act.

TRANSFER OF PERSONNEL AND OTHER MATTERS

SEC. 302. (a) Except as provided in the next sentence, the personnel employed in connection with, and the personnel positions, assets, liabilities, contracts, property, records, and unexpended balances of appropriations, authorizations, allocations, and other funds employed, held, used, arising from, available to or to be made available in connection with the functions and programs transferred by this Act, are, subject to section 202 of the Budget and Accounting Procedures Act of 1950 (31 U.S.C. 581c), correspondingly transferred for appropriate allocation. Personnel positions expressly created by law, personnel occupying those positions on

42 U.S.C. 5872.

the effective date of this Act, and personnel authorized to receive compensation at the rate prescribed for offices and positions at levels II, III, IV, or V of the Executive Schedule (5 U.S.C. 5313-5316) on the effective date of this Act shall be subject to the provisions of subsection (c) of this section and section 301 of this Act.

(b) Except as provided in subsection (c), transfer of nontemporary personnel pursuant to this Act shall not cause any such employee to be separated or reduced in grade or compensation for one year after such transfer.

(c) Any person who, on the effective date of this Act, held a position compensated in accordance with the Executive Schedule prescribed in chapter 53 of title 5 of the United States Code, and who, without a break in service, is appointed in the Administration to a position having duties comparable to those performed immediately preceding his appointment shall continue to be compensated in his new position at not less than the rate provided for his previous position.

INCIDENTAL DISPOSITIONS

42 U.S.C. 5873.

SEC. 303. The Director of the Office of Management and Budget is authorized to make such additional incidental dispositions of personnel, personnel positions, assets, liabilities, contracts, property, records, and unexpended balances of appropriations, authorizations, allocations, and other funds held, used, arising from, available

88 Stat. 1251.

to or to be made available in connection with functions transferred by this Act, as he may

deem necessary or appropriate to accomplish the intent and purpose of this Act.

DEFINITIONS

SEC. 304. As used in this Act— 42 U.S.C. 5874.

(1) any reference to "function" or "functions" shall be deemed to include references to duty, obligation, power, authority, responsibility, right, privilege, and activity, or the plural thereof, as the case may be; and

(2) any reference to "perform" or "performance", when used in relation to functions, shall be deemed to include the exercise of power, authority, rights, and privileges.

AUTHORIZATION OF APPROPRIATIONS

SEC. 305. (a) Except as otherwise provided by law, appropriations made under this Act shall be subject to annual authorization. 42 U.S.C. 5875.

(b) Authorization of appropriations to the Commission shall reflect the need for effective licensing and other regulation of the nuclear power industry in relation to the growth of such industry.

COMPTROLLER GENERAL AUDIT

SEC. 306. (a) Section 166. "Comptroller General Audit" of the Atomic Energy Act of 1954, as amended, shall be deemed to be applicable, respectively, to the nuclear and nonnuclear activities under title I and to the activities under title II. 42 U.S.C. 5876. 42 U.S.C. 2206.

Ante, pp. 1234, 1242.

(b) The Comptroller General of the United States shall audit, review, and evaluate the implementation of the provisions of title II of this Act by the Nuclear Safety and Licensing Commission not later than sixty months after the effective date of this Act, the Comptroller General shall prepare and submit to the Congress a report on his audit, which shall contain, but not be limited to —

Report to Congress.

(1) an evaluation of the effectiveness of the licensing and related regulatory activities of the Commission and the operations of the Office of Nuclear Safety Research and the Bureau of Nuclear Materials Security;

(2) an evaluation of the effect of such Commission activities on the efficiency, effectiveness, and safety with which the activities licensed under the Atomic Energy Act of 1954, as amended, are carried out;

(3) recommendations concerning any legislation he deems necessary, and the reasons therefor, for improving the implementation of title II.

REPORTS

Reports to the President and Congress. 42 U.S.C. 5877. Administration activities and progress.

SEC. 307. (a) The Administrator shall, as soon as practicable after the end of each fiscal year, make a report to the President for submission to the Congress on the activities of the Administration during the preceding fiscal year. Such report shall include a statement of the short-range and long-range goals, priorities, and plans of the Administration together with an assessment of the progress made toward the

attainment of those objectives and toward the more effective and efficient management of the Administration and the coordination of its functions.

Feasibility of transferring military application functions. 88 Stat. 1252.

(b) During the first year of operation of the Administration, the Administrator, in collaboration with the Secretary of Defense, shall conduct a thorough review of the desirability and feasibility of transferring to the Department of Defense or other Federal agencies the functions of the Administrator respecting military application and restricted data, and within one year after the Administrator first takes office the Administrator shall make a report to the President, for submission to the Congress, setting forth his comprehensive analysis, the principal alternatives, and the specific recommendations of the Administrator and the Secretary of Defense.

Commission activities and findings.

(c) The Commission shall, as soon as practicable after the end of each fiscal year, make a report to the President for submission to the Congress on the activities of the Commission during the preceding fiscal year. Such report shall include a clear statement of the short-range and long-range goals, priorities, and plans of the Commission as they relate to the benefits, costs, and risks of commercial nuclear power. Such report shall also include a clear description of the Commission's activities and findings in the following areas —

(1) insuring the safe design of nuclear power plants and other licensed facilities;

(2) investigating abnormal occurrences and defects in nuclear powerplants and other licensed facilities;

(3) safeguarding special nuclear materials at all stages of the nuclear fuel cycle;

(4) investigating suspected, attempted, or actual thefts of special nuclear materials in the licensed sector and developing contingency plans for dealing with such incidents;

(5) insuring the safe, permanent disposal of high-level radioactive wastes through the licensing of nuclear activities and facilities;

(6) protecting the public against the hazards of low-level radioactive emissions from licensed nuclear activities and facilities.

INFORMATION TO COMMITTEES

42 U.S.C. 5878. SEC. 308. The Administrator shall keep the appropriate congressional committees fully and currently informed with respect to all of the Administration's activities.

TRANSFER OF FUNDS

42 U.S.C. 5879. SEC. 309. The Administrator, when authorized in an appropriation Act, may, in any fiscal year, transfer funds from one appropriation to another within the Administration; except, that no appropriation shall be either increased or decreased pursuant to this section by more than 5 per centum of the appropriation for such fiscal year.

CONFORMING AMENDMENTS TO CERTAIN OTHER LAWS

SEC. 310. Subchapter II (relating to Executive Schedule pay rates) of chapter 53 of title 5, United States Code, is amended as follows:

(1) Section 5313 is amended by striking out "(8) Chairman, Atomic Energy Commission." and inserting in lieu thereof "(8) Chairman, Nuclear Regulatory Commission.", and by adding at the end thereof the following:

"(22) Administrator of Energy Research and Development Administration.".

(2) Section 5314 is amended by striking out "(42) Members, Atomic Energy Commission." and inserting in lieu thereof "(42) Members, Nuclear Regulatory Commission.", and by adding at the end thereof the following:

"(60) Deputy Administrator, Energy Research and Development Administration.".

(3) Section 5315 is amended by striking out paragraph (50), and by adding at the end thereof the following: 88 Stat. 1253.

"(100) Assistant Administrators, Energy Research and Development Administration (6).

"(101) Director of Nuclear Reactor Regulation, Nuclear Regulatory Commission.

"(102) Director of Nuclear Material Safety and Safeguards, Nuclear Regulatory Commission.

"(103) Director of Nuclear Regulatory Research, Nuclear Regulatory Commission.

"(104) Executive Director for Operations, Nuclear Regulatory Commission."

(4) Section 5316 is amended by striking out paragraphs (29), (62), (69), and (102), by striking out "(81) General Counsel of the Atomic Energy Commission," and inserting in lieu thereof "(81) General Counsel of the Nuclear

Regulatory Commission.", and by adding at the end thereof the following:

"(134) General Counsel, Energy Research and Development Administration.

"(135) Additional officers, Energy Research and Development Administration (8).

"(136) Additional officers, Nuclear Regulatory Commission (5).".

SEPARABILITY

42 U.S.C. 5801 note.

SEC. 311. If any provision of this Act, or the application thereof to any person or circumstance, is held invalid, the remainder of this Act, and the application of such provision to other persons or circumstances, shall not be affected thereby.

EFFECTIVE DATE AND INTERIM APPOINTMENTS

42 U.S.C. 5801 note. Publication in Federal Register.

SEC. 312. (a) This Act shall take effect one hundred and twenty days after the date of its enactment, or on such earlier date that the President may prescribe and publish in the Federal Register; except that any of the officers provided for in title I of this Act may be nominated and appointed, as provided by this Act, at any time after the date of enactment of this Act. Funds available to any department or agency (or any official or component thereof), any functions of which are transferred to the Administrator and the Commission by this Act, may, with the approval of the President, be used to pay the compensation and expenses of any officer appointed pursuant to this subsection until such time as funds for that purpose are otherwise available.

(b) In the event that any officer required by this Act to be appointed by and with the advice and consent of the Senate shall not have entered upon office on the effective date of this Act, the President may designate any officer, whose appointment was required to be made by and with the advice and consent of the Senate and who was such an officer immediately prior to the effective date of this Act, to act in such office until the office is filled as provided in this Act. While so acting, such persons shall receive compensation at the rates provided by this Act for the respective offices in which they act.

TITLE IV — SEX DISCRIMINATION

88 Stat. 1254.

SEX DISCRIMINATION PROHIBITED

42 U.S.C. 5891

SEC. 401. No person shall on the ground of sex be excluded from participation in, be denied a license under, be denied the benefits of, or be subjected to discrimination under any program or activity carried on or receiving Federal assistance under any title of this Act. This provision will be enforced through agency provisions and rules similar to those already established, with respect to racial and other discrimination, under title VI of the Civil Rights Act of 1964. However, this remedy is not exclusive and will not prejudice or cut off any other legal remedies available to a discriminatee.

42 U.S.C. 2000d.

Approved October 11, 1974.

LEGISLATIVE HISTORY

HOUSE REPORTS: No. 93-707 (Committee on Government Operations) and No. 93-1445 (Committee of Conference).

SENATE REPORT: No. 93-980 accompanying S. 2744 (Committee on Government Operations).

National Environmental Policy Act of 1969, § 102

SECTION 102. The Congress authorizes and directs that, to the fullest extent possible: (1) the policies, regulations, and public laws of the United States shall be interpreted and administered in accordance with the policies set forth in this Act, and (2) all agencies of the Federal Government shall —

(A) utilize a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and in decisionmaking which may have an impact on man's environment;

(B) identify and develop methods and procedures, in consultation with the Council on Environmental Quality established by title II of this Act, which will insure that presently unquantified environmental amenities and values may be given appropriate consideration in decisionmaking along with economic and technical considerations;

(C) include in every recommendation or report on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment, a detailed statement by the responsible official on —

(i) the environmental impact of the proposed action,

(ii) any adverse environmental effects which cannot be avoided should the proposal be implemented,

(iii) alternatives to the proposed action,

(iv) the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and

(v) any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented.

Prior to making any detailed statement, the responsible Federal official shall consult with and obtain the comments of any Federal agency which has jurisdiction by law or special expertise with respect to any environmental impact involved. Copies of such statement and the comments and views of the appropriate Federal, State, and local agencies, which are authorized to develop and enforce environmental standards, shall be made available to the President, the Council on Environmental Quality and to the public as provided by section 552 of title 5, United States Code, and shall accompany the proposal through the existing agency review processes;

(D) Any detailed statement required under subparagraph (C) after January 1, 1970, for any major Federal action funded under a program of grants to States shall not be deemed to be legally insufficient solely by reason of having been prepared by a State agency or official, if:

(i) the State agency or official has statewide jurisdiction and has the responsibility for such action,

(ii) the responsible Federal official furnishes guidance and participates in such preparation,

(iii) the responsible Federal official independently evaluates such statement prior to its approval and adoption, and

(iv) after January 1, 1976, the responsible Federal official provides early notification to, and solicits the views of, any other State or any Federal land management entity of any action or any alternative thereto

which may have significant impacts upon such State or Federal land management entity and, if there is any disagreement on such impacts, prepares a written assessment of such impacts and views for incorporation into such detailed statement.

The procedures in this subparagraph shall not relieve the Federal official of his responsibilities for the scope, objectivity, and content of the entire statement or of any other responsibility under this Act; and further, this subparagraph does not affect the legal sufficiency of statements prepared by State agencies with less than statewide jurisdiction.

(E) study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources;

(F) recognize the worldwide and long-range character of environmental problems and, where consistent with the foreign policy of the United States, lend appropriate support to initiatives, resolutions, and programs designed to maximize international cooperation in anticipating and preventing a decline in the quality of mankind's world environment;

(G) make available to States, counties, municipalities, institutions, and individuals, advice and information useful in restoring, maintaining, and enhancing the quality of the environment;

(H) initiate and utilize ecological information in the planning and development of resource-oriented projects; and

(I) assist the Council on Environmental Quality established by title II of this Act.

10 CFR § 51.20(e)

(e) In the Environmental Report required by paragraph (a) for light-water-cooled nuclear power reactors, the contribution of the environmental effects of uranium mining and milling, the production of uranium hexafluoride, isotopic enrichment, fuel fabrication, reprocessing of irradiated fuel, transportation of radioactive materials and management of low level wastes and high level wastes related to uranium fuel cycle activities to the environmental costs of licensing the nuclear power reactor, shall be as set forth in the following table. No further discussion of such environmental effects shall be required.

TABLE S-3. — *Summary of environmental considerations for uranium fuel cycle*

[Normalized to model LWR annual fuel requirement]

Natural resource use	Total	Maximum effect per annual fuel requirement of model 1,000 MWe LWR
Land (acres):		
Temporarily committed	63	
Undisturbed area	45	
Disturbed area	18	Equivalent to 90 MWe coal-fired powerplant.
Permanently committed	4.6	
Overburden moved (millions of MT)	2.7	Equivalent to 90 MWe coal-fired powerplant.
Water (millions of gallons):		
Discharged to air	156	≈2 percent model 1,000 MWe LWR with cooling tower.
Discharged to water bodies	11,040	
Discharged to ground	123	
Total	11,319	<4 percent of model 1,000 MWe LWR with once-through cooling.
Fossil fuel:		
Electrical energy (thousands of MW-hour)	317	<5 percent of model 1,000 MWe LWR output.
Equivalent coal (thousands of MT)	115	Equivalent to the consumption of a 45 MWe coal-fired powerplant.
Natural gas (millions of scf)	92	<0.2 percent of model 1,000 MWe energy output.
Effluents—chemical (MT):		
Gases (including entrainment):[1]		
SO_x	4,400	
NO_x[2]	1,177	Equivalent to emissions from 45 MWe coal-fired plant for a year.
Hydrocarbons	13.5	
CO	28.7	
Particulates	1,156	
Other gases:		
F-	.72	Principally from UF_6 production enrichment and reprocessing. Concentration within range of state standards—below level that has effects on human health.
Liquids:		
$SO_4^=$	10.3	From enrichment, fuel fabrication, and reprocessing steps. Components that constitute a potential for adverse environmental effect are present in dilute concentrations and receive additional dilution by receiving bodies of water to levels below permissible standards. The constitutents that require dilution and the flow of dilution water are: NH_3—600 cfs. NO_3—20 cfs. Fluoride—70 cfs.
NO_3^-	26.7	
Fluoride	12.9	
Ca^{++}	5.4	
Cl^-	8.6	
Na^+	16.9	
NH_3	11.5	
Fe	.4	
Tailings solutions (thousands of MT)	240	From mills only—no significant effluents to environment.
Solids	91,000	Principally from mills—no significant effluents to environment.
Effluents—Radiological (curies):		
Gases (including entrainment):		
Rn-222	75	Principally from mills—maximum annual dose rate <4 percent of average natural background within 5 mi of mill. Results in 0.06 man-rem per annual fuel requirement.
Ra-226	.02	
Th-230	.02	
Uranium	.032	
Tritium (thousand)	16.7	Principally from fuel reprocessing plants—Whole body dose is 6 man-rem per annual fuel requirements for population within 50 mi radius. This is <0.007 percent of average natural background dose to this population. Release from Federal Waste Repository of 0.005 Ci/yr has been included in fission products and transuranics total.
Kr-85 (thousands)	350	
I-129	.0024	
I-131	.024	
Fission products and transuranics	1.01	
Liquids:		
Uranium and daughters	2.1	Principally from milling—included in tailings liquor and returned to ground—no effluents; therefore, no effect on environment.
Ra-226	.0034	From UF_6 production-concentration 5 percent of 10 CFR 20 for total processing of 27.5 model LWR annual fuel requirements.
Th-230	.0015	
Th-234	.01	From fuel fabrication plants—concentration 10 percent of 10 CFR 20 for total processing 26 annual fuel requirements for model LWR.
Ru-106[3]	.15	From reprocessing plants—maximum concentration 4 percent of 10 CFR 20 for total reprocessing of 26 annual fuel requirements for model LWR.
Tritium (thousands)	2.5	
Solids (buried):		
Other than high level	601	All except 1 Ci comes from mills—included in tailings returned to ground—no significant effluent to the environment, 1 Ci from conversion and fuel fabrication is buried.
Effluents — Thermal (billions of British Thermal Units)	3,360	<7 percent of model 1,000 MWe LWR.
Transportation (man-rem): Exposure of workers and general public	.334	

[1] Estimated effluents based upon combustion of equivalent coal for power generation.
[2] 1.2 percent from natural gas use and process.
[3] Co-137 (0.075 Ci/AFR) and Sr-90 (0.004 Ci/AFR) are also emitted.